SAMSUNG

ELECTRONICS

© Samsung Electronics Co., Ltd. **JUN. 1999**

Printed in Korea

AH68-00180A

SERVICE MANUAL DVD-739

SAMSUNG

DVD PLAYER

DVD-739

SERVICE Manual

DVD PLAYER

CONTENTS

1. Precautions
2. Reference Information
3. Product Specification
4. Operating Instructions
5. Disassembly and Reassembly
6. Circuit Descriptions
7. Troubleshooting
8. Exploded Views and Parts List
9. Electrical Parts List
10. Block Diagram
11. PCB Diagrams
12. Wiring Diagram
13. Schematic Diagrams

1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any remove for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use a isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.
Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

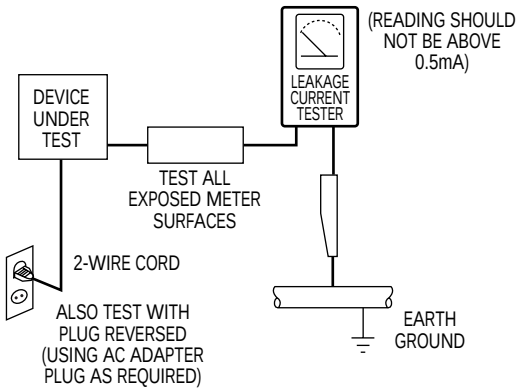

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be re-pared and rechecked before it is returned to the customer. See Fig. 1-2.

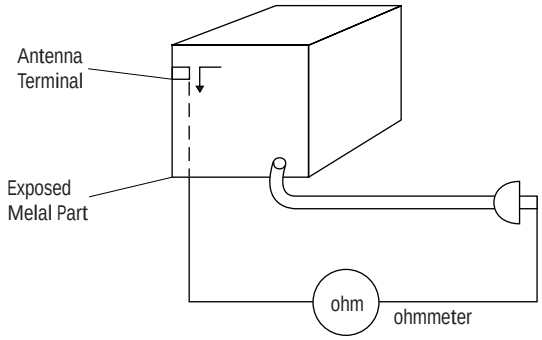


Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes non or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter of add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the service, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚠)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might created shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing Instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circument create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components i-entified by shading, by(⚠) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- Be sure to put on a wrist strap grounded to the sheet.
- Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

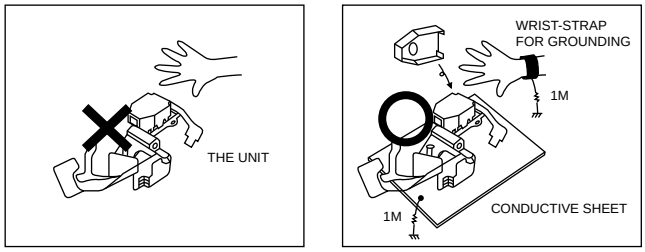


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

1-5 Pick-up disassembly and reassembly

1-5-1 Disassembly

1) Remove the power cable.
2) Switch LD SW3 on deck PCB to “OFF” before removing the FPC
   (Inserted into Main PCB CN6. See Fig. 1-4)
3) Disassemble the deck.
4) Disassemble the deck PCB.

1-5-2 Assembly

1) Replace the Pick-up.
2) Assemble the deck PCB.
3) Reassemble the deck.
4) Switch LD SW3 on Deck PCB to “ON” and insert FPC into Main PCB CN6 (See Fig 1-4).

Note : If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

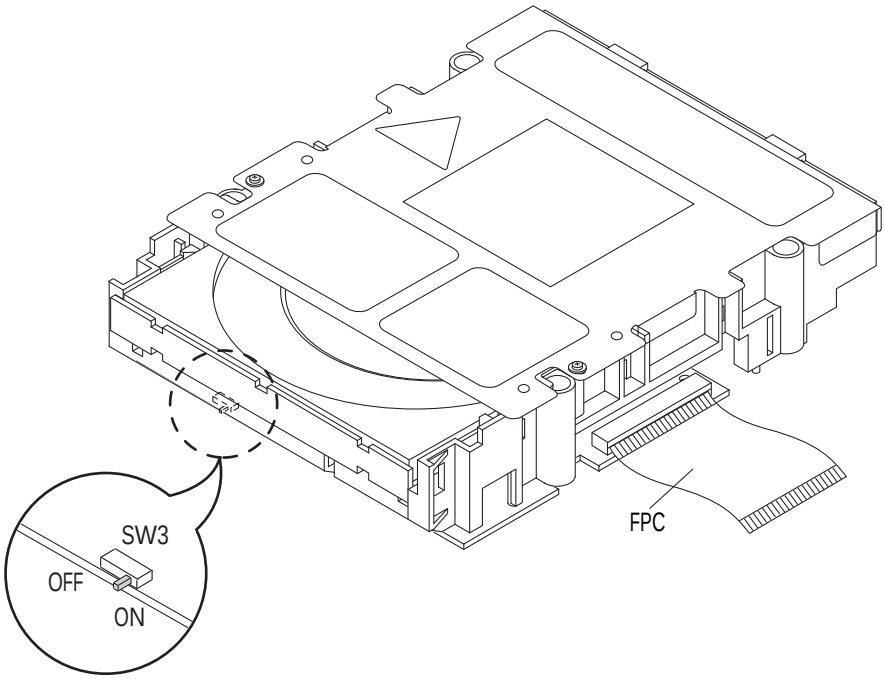
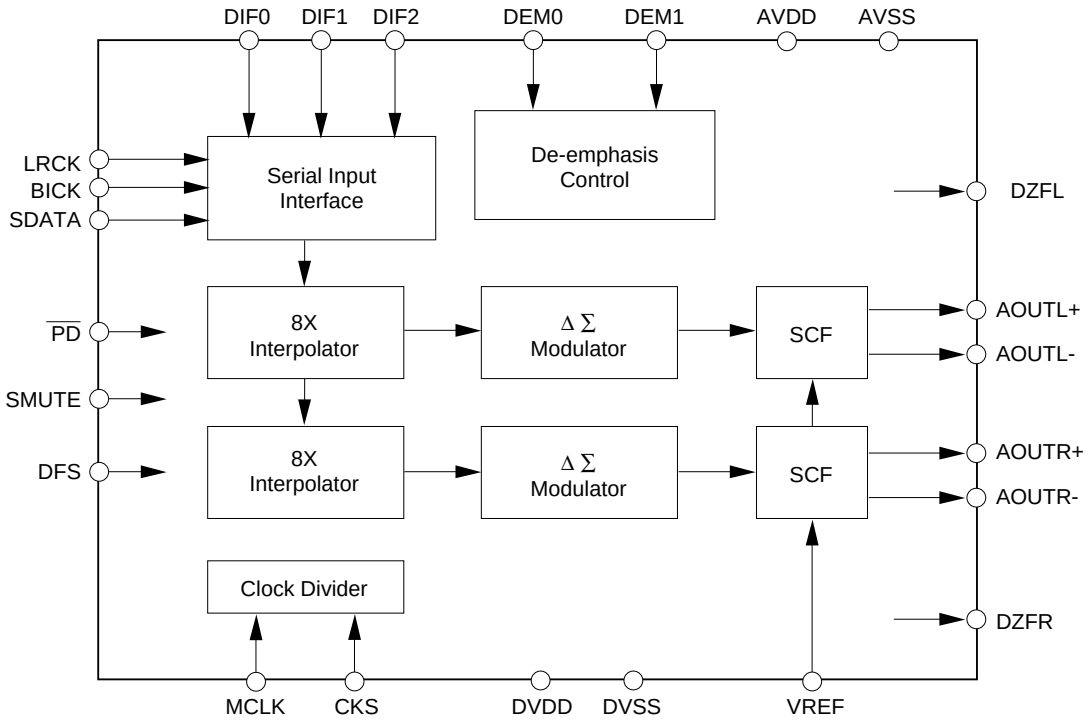


Fig. 1-4

2. Reference Information

2-1 IC Dsecriptions

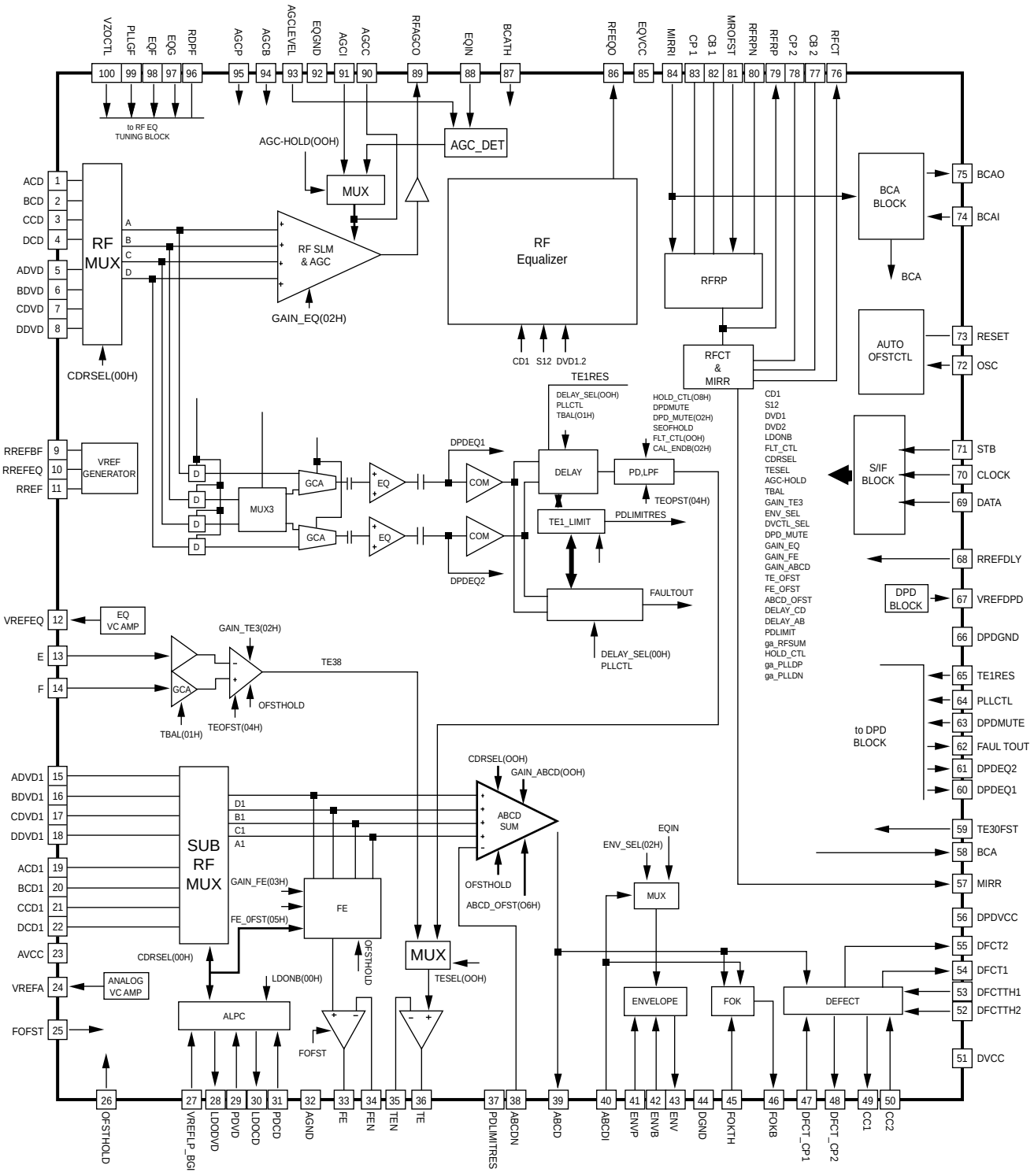
2-1-1 AIC1 (AK4324 ; Digital-to-Analog Converter)



PIN	I/O	NAME	FUNCTION	PIN	I/O	NAME	FUNCTION
1	-	DVSS	Digital ground pin	13	I	DIF0	Digital input format pin
2	I	DVDD	Digital power supply	14	I	DIF1	Digital input format pin
3	I	CKS	Master clock select pin (Internal pull-down pin) Nomal speed "L":MCLK = 256fs, "H":MCLK = 384fs Double speed "L":MCLK = 128fs, "H":MCLK = 192fs	15	I	DIF2	Digital input format pin
4	I	MCLK	Master clock input pin	16	O	AOUTR-	Rch negative analog output pin
5	I	$\overline{PD}$	Power-Down mode pin. When at "L", the AK4324 is in power-down and is held in rest. The AK4324 should always be reset upon power-pin	17	O	AOUTR+	Rch positive analog output pin
6	I	BICK	Audio serial data input pin 64fs clock is recommended to be input on this pin	18	O	AOUTL-	Lch negative analog output pin
7	I	SDATA	Audio serial data input pin 2's complement MSB-first data is input on this pin.	19	O	AOUTL+	Lch positive analog output pin
8	I	LRCK	L/R clock pin.	20	-	AVSS	Analog ground pin
9	I	SMUTE	Soft mute pin When this pin goes "H", soft mute cycle is initiated When returning "L", the output mute releases.	21	O	VREF	Voltage reference input pin
10	I	DFS	Double speed sampling mode pin (Internal pull-down pin) "L":normal speed, "H":double speed	22	O	AVDD	Analog power supply pin.
11	I	DEM0	De-emphasis frequency select pin	23	O	DZFR	Rch zero input detect pin
12	I	DEM1	De-emphasis frequency select pin	24	O	DZFL	Lch zero input detect pin

Note : Allinput pins except internal pull-down pins should not be left floating.

2-1-2 RIC1 (KS1461 ; RF)



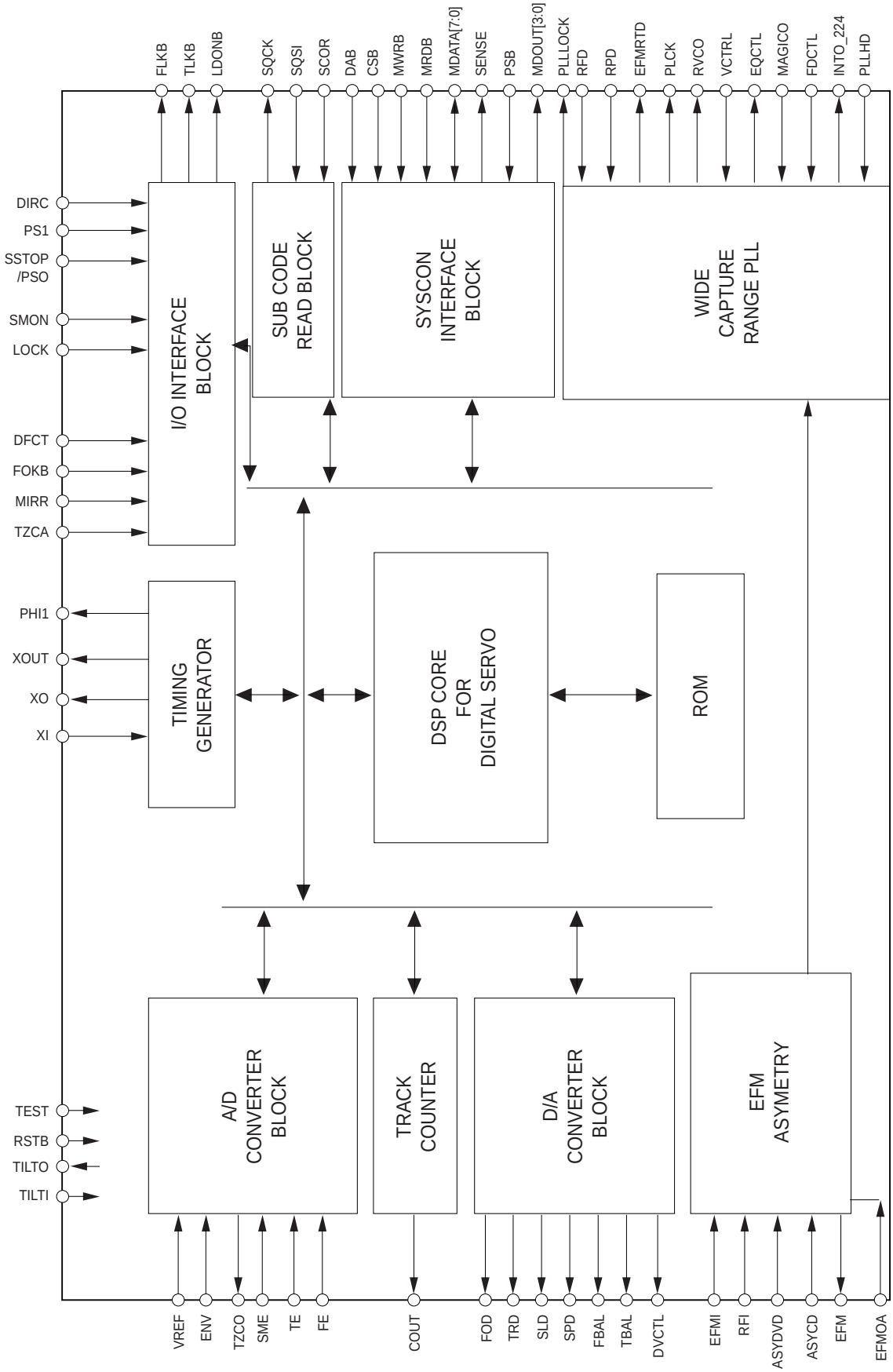
PIN NAME		I/O	FUNCTION
1	ACD	I	CD optical main beam A AC coupling input port for RF
2	BCD	I	CD optical main beam B AC coupling input port for RF
3	CCD	I	CD optical main beam C AC coupling input port for RF
4	DCD	I	CD optical main beam D AC coupling input port for RF
5	ADVD	I	DVD optical main beam A AC coupling input port for RF
6	BDVD	I	DVD optical main beam B AC coupling input port for RF
7	CDVD	I	DVD optical main beam C AC coupling input port for RF
8	DDVD	I	DVD optical main beam D AC coupling input port for RF
9	RREFBF	-	RF AMP I/O buffer bias resistance connection port
10	RREFEQ	-	RF EQ bias resistance connection port
11	RREF	-	Analog block bias resistance connection port
12	VREFEQ	O	CAP connection port for RF EQ center voltage
13	E	I	CD optical sub beam E input port for SERVO
14	F	I	CD optical sub beam F input port for SERVO
15	ADVD1	I	DVD optical main beam A input port for SERVO
16	BDVD1	I	DVD optical main beam B input port for SERVO
17	CDVD1	I	DVD optical main beam C input port for SERVO
18	DDVD1	I	DVD optical main beam D input port for SERVO
19	ACD1	I	CD optical main beam F input port for SERVO
20	BCD1	I	CD optical main beam F input port for SERVO
21	CCD1	I	CD optical main beam F input port for SERVO
22	DCD1	I	CD optical main beam F input port for SERVO
23	AVCC	P	Power voltage input port for analog part
24	VREFA	-/O	CAP connection port for analog part center voltage, Use at other block
25	FOFST	O	CAP connection port for focus auto offset (OPEN)
26	OFSTHOLD	I	ON/OFF connection port for auto offset block (L : auto offset adjustment H : serial offset adjustment)
27	VREFLP_BGI	I	BANDGAP voltage input port for ALPC
28	LDODVD	O	DVD optical laser diode driving voltage output port
29	PDDVD	I	DVD optical laser monitor diode voltage input port
30	LDOCD	O	CD optical laser diode driving voltage output port
31	PDCD	I	CD optical laser monitor diode voltage input port
32	AGND	P	Power GND port for analog part
33	FE	O	FE AMP output port

PIN NAME		I/O	FUNCTION
34	FEN	I	FE Input port for AMP GAIN setting
35	TEN	I	Input port for TE AMP GAIN setting
36	TE	O	TE AMP output port
37	PDLIMTRES	-	Bias resistance port for PDLIMIT
38	ABCDN	I	Input port for ABCD AMP GAIN setting
39	ABCD	O	ABCD AMP output port
40	ABCDI	I	ABCD AC coupling input port for SERVO monitor
41	ENVP	-	Peak hold time constant setting RC connection port for RF envelope detect
42	ENVB	-	Bottom hold time constant setting RC connection port for RF envelope detect
43	ENV	O	RF envelope detect output port
44	DGND	P	Power GND input port for digital circuit
45	FOKTH	I	Focus OK comparing level input port
46	FOKB	O	Focus OK comparator output port (L: FOCUS OK)
47	DFCT_CP1	-	Peak hold time constant connection port SERVO defect max. time setting
48	DFCT_CP2	-	Peak hold time constant connection port PLL defect min. time setting
49	CC1	O	Output port of peak detector for defect
50	CC2	I	AC coupling input port for defect
51	DVCC	P	Power voltage input port for digital circuit
52	DVCTTH2	-	Resistance connection port for PLL defect comparating level setting
53	DFCTTH1	-	Resistance connection port for SERVO defect comparating level setting
54	DFCT1	O	Defect output port for SERVO
55	DFCT2	O	Defect output port for PLL
56	DPDVCC	P	Power voltage input port for DPD TE
57	MIRR	O	Mirror output port
58	BCA	O	BCA output port
59	TE3OFST	-	Resistance connection port for 3BTE offset
60	DPDEQ1	O	DPD EQ (A+C) output port
61	DPDEQ2	O	DPD EQ (B+D) output port
62	FAULTOUT	O	DPD defect waveform output port (MONITOR)
63	DPDMUTE	I	DPD TE MUTE control port (H : MUTE)
64	PLLCTL	I	DPD TE PLL variable input port

PIN NAME		I/O	FUNCTION
65	TE1RES	I	DPD TE PLL variable bias resistance
66	DPDGND	P	Power GND input port for DPD TE
67	VREFDPD	O	CAP connection port for DPD TE center
68	RREFDLY	-	Bias resistance connection port for delta block
69	DATA	I	Data input port
70	CLOCK	I	Clock input port
71	STB	I	Data enable input port
72	OSC		OSC time constant input port for auto offset block
73	RESET	I	Reset input port for auto offset block (L : RESET)
74	BCAI	I	BCA FILTER1
75	BCAO	O	BCA FILTER2
76	RFCT	O	RF ripple center voltage output port for mirror
77	CB2	-	Bottom hold time constant RC connection port for RFCT generation
78	CP2	-	Peak hold time constant RC connection port for RFCT generation
79	RFRP	O	RF ripple AMP output port for mirror
80	RFRPN	I	RF ripple AMP GAIN input port for mirror
81	MROFST	I	RF ripple offset control port for mirror
82	CB1	-	Bottom hold time constant RC connection port for RFCT generation
83	CP1	-	Peak hold time constant RC connection port for RFCT generation
84	MIRRI	I	Input port for MIRR signal generation
85	EQVCC	P	Power voltage input port for RF EQ
86	RFEQO	O	RF EQ output port
87	BCATH	I	BCA comparating level control port
88	EQIN	I	RFAGCO input port for RF EQ
89	RFAGCO	O	RF AGC AMP output port
90	AGCC	-	AGC time constant CAP connection port
91	AGCI	I	When AGC is “HOLD”, AGC voltage input port
92	EQGND	P	Power GND input port for RF EQ
93	AGCLEVEL	I	AGC level control voltage input port
94	AGCB	-	RF bottom hold time constant RC connection port for RF AGC
95	AGCP	-	RF peak hold time constant RC connection port for RF AGC

PIN NAME		I/O	FUNCTION
96	RDPF	-	Bias resistance connection port for RF EQ frequency setting
97	EQG	I	RF EQ boost gain control voltage input port
98	EQF	I	RF EQ peak frequency control voltage input port
99	PLLGF	I	RF EQ boost, peak frequency gain control port corresponding to wideband PLL (PLLG. PLLF resistance internal design)
100	VZOCTL	I	RF EQ control port (When No. PLLG isn't adjusted, apply DC CTL voltage.)

2-1-3 SIC1 (KS1452 ; Digital Servo)



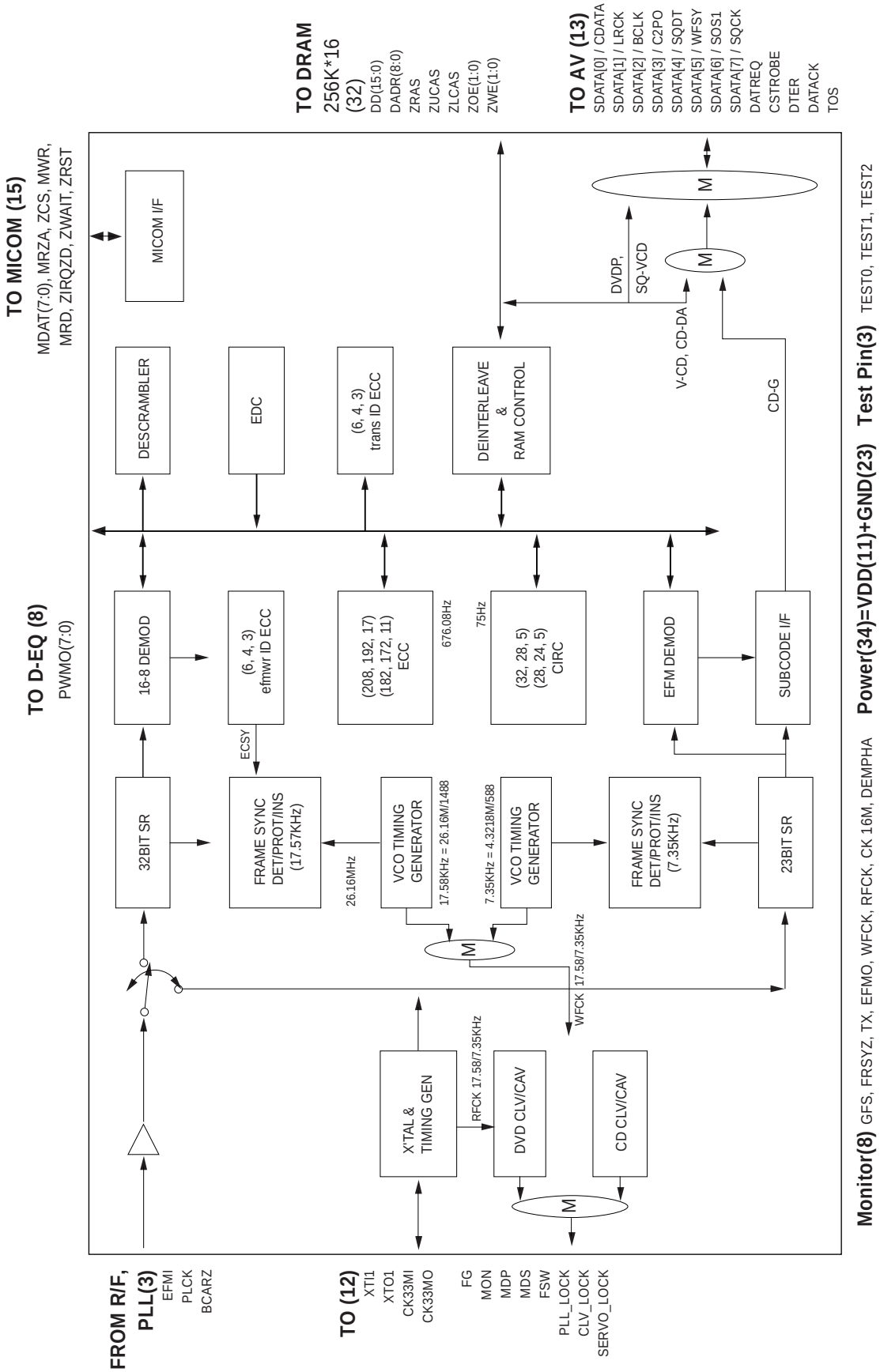
PIN NAME		I/O	FUNCTION
1	MDOUT3	O	Mode data3 out controlled by micom
2	SSTOP/PSO	I	Limit switch/sled position sensor input pin0
3	PS1	I	Sled motor position sensor input pin 1
4	TEST	I	Test pin (L : normal H : test)
5	COUT	O	Counter clock
6	FLKB	O	Focus servo lock signal output pin
7	TLKB	O	Tracking servo lock signal output pin
8	PSB	I	0 : 1BIT 1 : 8BIT
9	RSTB	I	System reset signal input pin
10	CSB	I	Micom chip select pin
11	DAB	I	Micom data/address select pin
12	MWRB	I	Micom write clock signal input pin
13	MRDB	I	Micom read clock signal input pin
14	MDATA0	I/O	Micom data pin 0
15	MDATA1	I/O	Micom data pin 1
16	MDATA2	I/O	Micom data pin 2
17	MDATA3	I/O	Micom data pin 3
18	MDATA4	I/O	Micom data pin 4
19	MDATA5	I/O	Micom data pin 5
20	MDATA6	I/O	Micom data pin 6
21	MDATA7	I/O	Micom data pin 7
22	SENSE	O	Internal status monitor pin
23	DVDD	P	Servo logic & ROM VDD power supply pin
24	XI	I	System clock signal input pin
25	XO	O	System clock signal output pin
26	XOUT	O	Clock out (33.9688MHz) to DSP
27	DVSS	P	Servo logic & ROM VSS power supply pin
28	SQCK	O	Clock output pin for subcode data read
29	SQSI	I	Subcode data input pin
30	SCOR	I	Timing detection input pin for subcode data read
31	SMON	I	Motor ON signal input pin
32	LOCK	I	Lock signal input pin
33	DIRC	I	Direct jump control (for 1 track jump)

PIN NAME		I/O	FUNCTION
34	FOKB	I	Focus OK signal input pin
35	FDCTL	I	PLL frequency detect control input pin
36	LDONB	O	Laser diode ON signal output pin
37	DFCT	I	Defect Detection signal input pin
38	MIRR	I	Mirror signal input pin
39	PLLHD	I	PLL hold signal from micom
40	INTO_224	O	Servo interrupt monitor pin
41	PVDD	P	PLL logic block VDD power supply pin
42	PLCK	O	PLCK
43	PLLLOCK	O	Frequency lock detect output (H : Lock L : Unlock)
44	EFMRTD	O	Latched EFM output signal
45	PVSS	P	PLL logic block VSS power supply pin
46	RVCO	I	Resistor pin for VCO GAIN
47	RFD	I	Gain adjust resister for frequence detector
48	RPD	I	Gain adjust resister for phase detector
49	VCTL	I	Control voltage for VCO
50	MAGICO	I	Input for hysteresis control of FD output (for test)
51	EFMOA	I	EFM offset adjustment pin
52	TZCO	O	Tracking zero cross output pin
53	SVDD	P	Servo CPU VDD power supply pin
54	EQCTL	O	EQ control signal
55	EFMI	I	EFM signal for test
56	EFMO	O	EFM signal
57	LPFDVD	I	Asymmetric input signal for DVD
58	LPFCD	I	Asymmetric input signal for CD
59	RFI	I	RF input signal
60	SVSS	P	Servo CPU VSS power supply pin
61	AVSS	P	Analog block VSS power supply pin
62	SME	I	Spindle error input pin
63	VREF	I	Reference voltage input pin
64	TE	I	Tracking error signal input pin

PIN NAME		I/O	FUNCTION
65	FE	I	Focus error signal input pin
66	ENV	I	RF envelope input pin
67	TILTI	I	Tilt in (reserved)
68	AVDD	P	Analog block VDD power supply pin
69	TILTO	O	Tilt out (reserved)
70	DVCTL	O	Depth variation control signal output pin
71	TBAL	O	Tracking balance signal output pin
72	FBAL	O	Focus balance signal output pin

PIN NAME		I/O	FUNCTION
73	SLD	O	Sled motor drive signal output pin
74	SPD	O	Spindle motor drive signal output pin
75	FOD	O	Focus actuator drive signal output pin
76	TRD	O	Tracking actuator drive signal output pin
77	TZCA	I	TE signal for tracking zero cross input pin
78	MDOUT0	O	Mode data 0 out controlled by micom
79	MDOUT1	O	Mode data 1 out controlled by micom
80	MDOUT2	O	Mode data 2 out controlled by micom

2-1-4 DIC1 (KS1453 ; DVD Data Processor)



PIN	NAME	FUNCTION
1	DVSS	Digital GND (0V)
2	ZCS_IN	Chip select (Active Low)
3	MRZA_IN	Micom register select (L -> Register H -> Data)
4	DVSS	Digital GND (0V)
5	MDAT7_BI	Micom data bus
6	MDAT6_BI	Micom data bus
7	MDAT5_BI	Micom data bus
8	MDAT4_BI	Micom data bus
9	MDAT3_BI	Micom data bus
10	MDAT2_BI	Micom data bus
11	MDAT1_BI	Micom data bus
12	MDAT0_BI	Micom data bus
13	DVDD	Digital power (+5V)
14	XTI_IN	System clock input for 26.16 MHz
15	XTO_OUT	System clock output for 26.16 MHz
16	DVSS	Digital GND (0V)
17	DD15_BI	DRAM data bus
18	DD0_BI	DRAM data bus
19	DD14_BI	DRAM data bus
20	DD1_BI	DRAM data bus
21	DVSS	Digital GND (0V)
22	DD13_BI	DRAM data bus
23	DD2_BI	DRAM data bus
24	DD12_BI	DRAM data bus
25	DD3_BI	DRAM data bus
26	DVDD	Digital power (+5V)
27	DD11_BI	DRAM data bus
28	DD4_BI	DRAM data bus
29	DD10_BI	DRAM data bus
30	DD5_BI	DRAM data bus
31	DVSS	Digital GND (0V)
32	DD9_BI	DRAM data bus

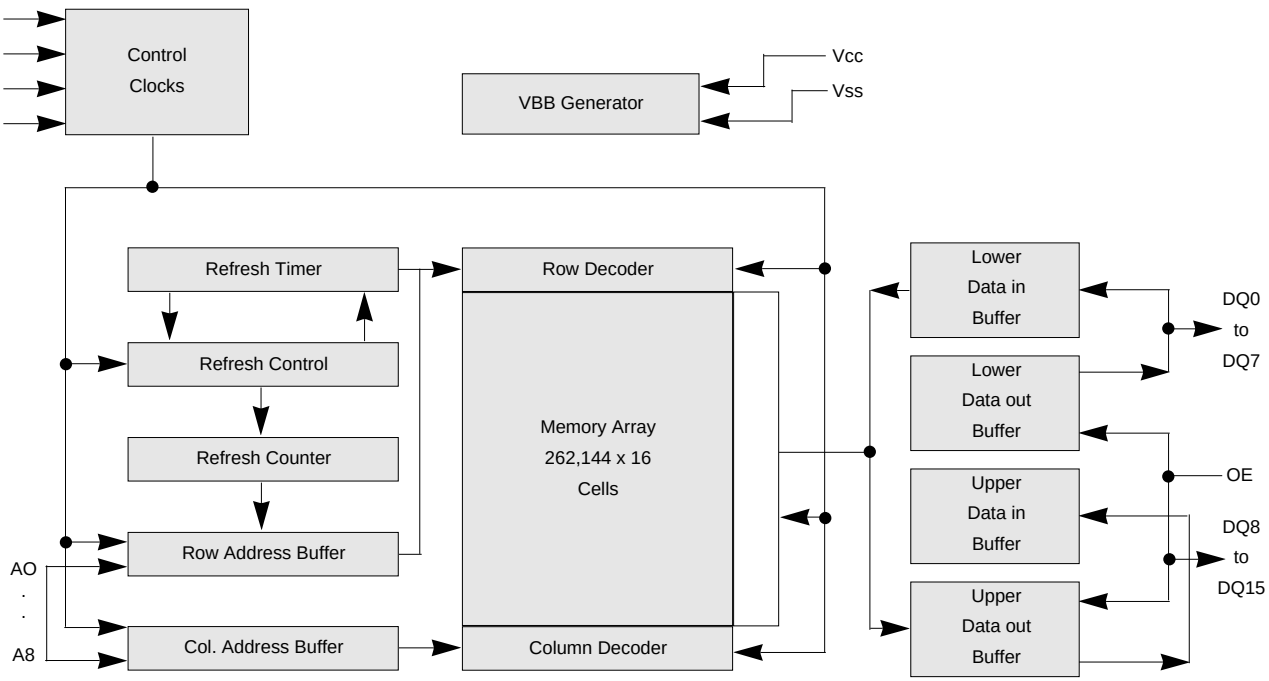
PIN	NAME	FUNCTION
33	DD6_BI	DRAM data bus
34	DD8_BI	DRAM data bus
35	DD7_BI	DRAM data bus
36	DVSS	Digital GND (0V)
37	ZLCAS_OUT	DRAM row column address strobe
38	ZUCAS_OUT	DRAM upper column address strobe
39	ZWE1_OUT	DRAM write enable 1 (8M ONLY)
40	ZWE0_OUT	DRAM write enable 0 (4M, 8M, 16M)
41	ZOE1_OUT	DRAM output enable 1 (16M, -------, 16M)
42	DVDD	Digital power (+5V)
43	ZOE0_OUT	DRAM output enable 0
44	ZRAS_OUT	DRAM row address strobe
45	DADR8_OUT	DRAM address bus
46	DADR7_OUT	DRAM address bus
47	DVSS	Digital GND (0V)
48	DADR0_OUT	DRAM address bus
49	DADR6_OUT	DRAM address bus
50	DADR1_OUT	DRAM address bus
51	DADR5_OUT	DRAM address bus
52	DADR2_OUT	DRAM address bus
53	DADR4_OUT	DRAM address bus
54	DADR3_OUT	DRAM address bus
55	DVSS	Digital GND (0V)
56	DVSS	Digital GND (0V)
57	TOS_OUT	Top of sector
58	DATACK_OUT	Data acknowledge signal output
59	DVDD	Digital power (+5V)
60	SDATA0_OUT	DVD data/CD data bitstream output
61	SDATA1_OUT	DVD data/CD data L/R clock (LRCK)
62	SDATA2_OUT	DVD data/CD data bit clock (BLCK)
63	SDATA3_OUT	DVD data/CD data error flag (C2P0)
64	SDATA4_OUT	DVD data/Sub code serial data (SQDT)
65	SDATA5_OUT	DVD data/Sub code frame sink (WFSY)

PIN	NAME	FUNCTION
66	SDATA6_OUT	DVD data/Sub code block sink (S0S1)
67	SDATA7_BI	DVD data/Sub code serial clock (SQCK)
68	DVSS	Digital GND (0V)
69	CSTROBE_OUT	Data strobe (clock) output
70	DATREQ_IN	Data request from A/V decoder or ROM decoder
71	DTER_OUT	DVD data error output
72	DVSS	Digital GND (0V)
73	PWM07_OUT	PWM output signal
74	PWM06_OUT	PWM output signal
75	PWM05_OUT	PWM output signal
76	PWM04_OUT	PWM output signal
77	DVDD	Digital power (+5V)
78	PWM03_OUT	PWM output signal
79	PWM02_OUT	PWM output signal
80	PWM01_OUT	PWM output signal
81	PWM00_OUT	PWM output signal
82	DVSS	Digital GND (0V)
83	DVSS	Digital GND (0V)
84	DVSS	Digital GND (0V)
85	DVDD	Digital power (+5V)
86	DVDD	Digital power (+5V)
87	DVSS	Digital GND (0V)
88	DVSS	Digital GND (0V)
89	DVSS	Digital GND (0V)
90	DVSS	Digital GND (0V)
91	FRSYZ_OUT	Frame sync out
92	TX_OUT	Digital out
93	GFS_OUT	Good frame sync detection result output ("H" active)
94	DVSS	Digital GND (0V)
95	CK33MI_IN	System clock input for 33.8688MHz
96	CK33MO_OUT	System clock output for 33.8688MHz
97	DVSS	Digital GND (+5V)

PIN	NAME	FUNCTION
98	TEST0_IN	Test mode setting port
99	TEST1_IN	Test mode setting port
100	TEST2_IN	Test mode setting port
101	EFMO_OUT	EFM out
102	WFCK_OUT	Write frame pulse
103	RFCK_OUT	Reference frame pulse
104	PLCK_IN	Phase locked clock
105	DVSS	Digital GND (0V)
106	PLLLOCK_OUT	Lock signal for PLL
107	CLVLOCK_OUT	Lock signal for CLV
108	SERLOCK_OUT	Lock signal for SERVO
109	MDP_OUT	Spindle motor phase control signal (3-state)
110	MDS_OUT	Spindle motor speed control signal (3-state)
111	DVSS	Digital GND (0V)
112	DVSS	Digital GND (0V)
113	MON_OUT	Spindle motor ON/OFF control output
114	FG_IN	Reference signal for CAV
115	FSW_OUT	Spindle motor output filter conversion output (3-state)
116	EFMI_IN	EFM/EFM+ signal input
117	DVDD	Digital power (+5V)
118	DVDD	Digital power (+5V)
119	DVDD	Digital power (+5V)
120	CK16M_OUT	2Ì–¡÷ clock of CK33M/16.934MHz
121	DEMPHA_OUT	When DEEMPHASIS is ON, "HIGH".
122	BCARZ_IN	BCA input signal
123	DVSS	Digital GND (0V)
124	ZRST_IN	Hardware reset active low
125	ZWAIT_OUT	Micom read/write access wait ("L" wait)
126	ZIRQZD_OUT	Interrupt request from micom
127	MRD_IN	Micom read strobe (schmidt trigger)
128	MWR_IN	Micom write strobe (schmidt trigger)

2-1-5 DIC2 (KM416C254BJ-6 ; CMOS DRAM)

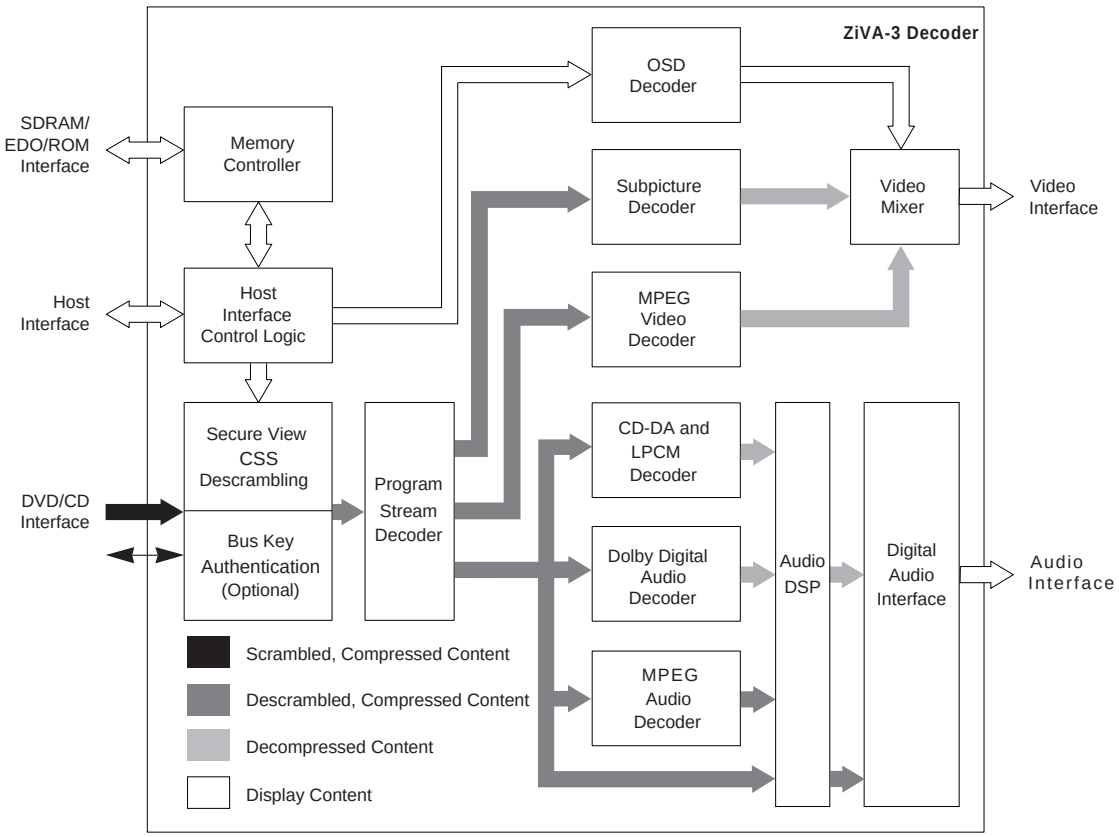
BLOCK DIAGRAM



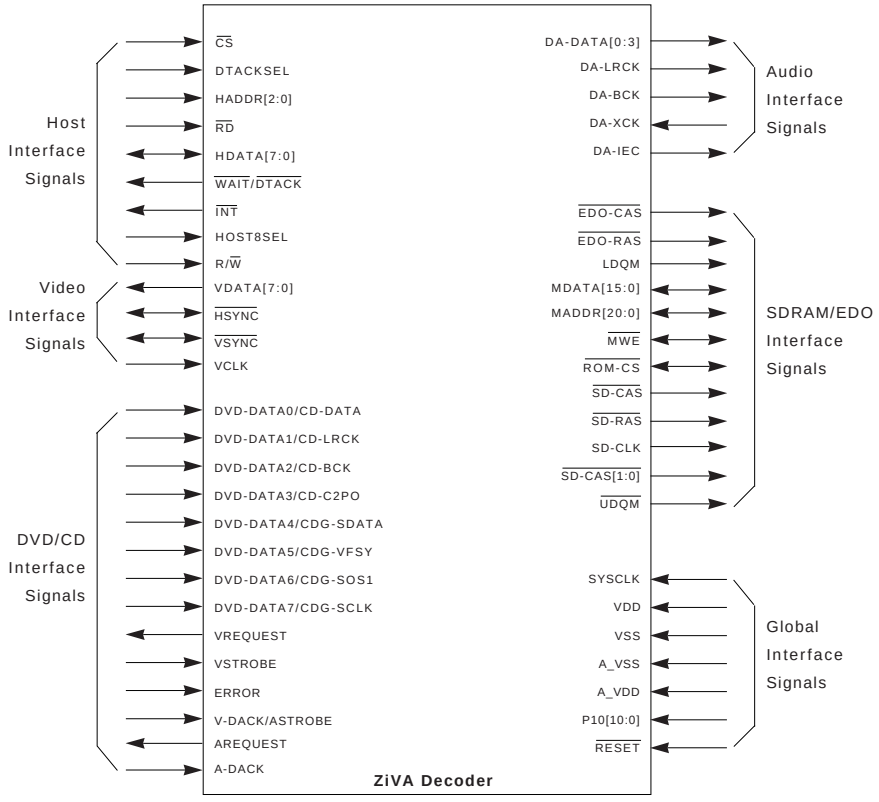
NAME	FUNCTION
A0-A8	Address Inputs
DQ0-15	Data in/Out
VSS	Ground
$\overline{RAS}$	Row Address Strobe
$\overline{UCAS}$	Upper Column Address Strobe
$\overline{LCAS}$	Lower Column Address Strobe
$\overline{W}$	Read/Write Input
$\overline{OE}$	Data Output Enable
V_{cc}	Power (+5V)
	Power (+3.3V)
N.C	No Connection

2-1-6 VIC1 (ZiVA-3 ; Audio/Video Decoder)

BLOCK DIAGRAM

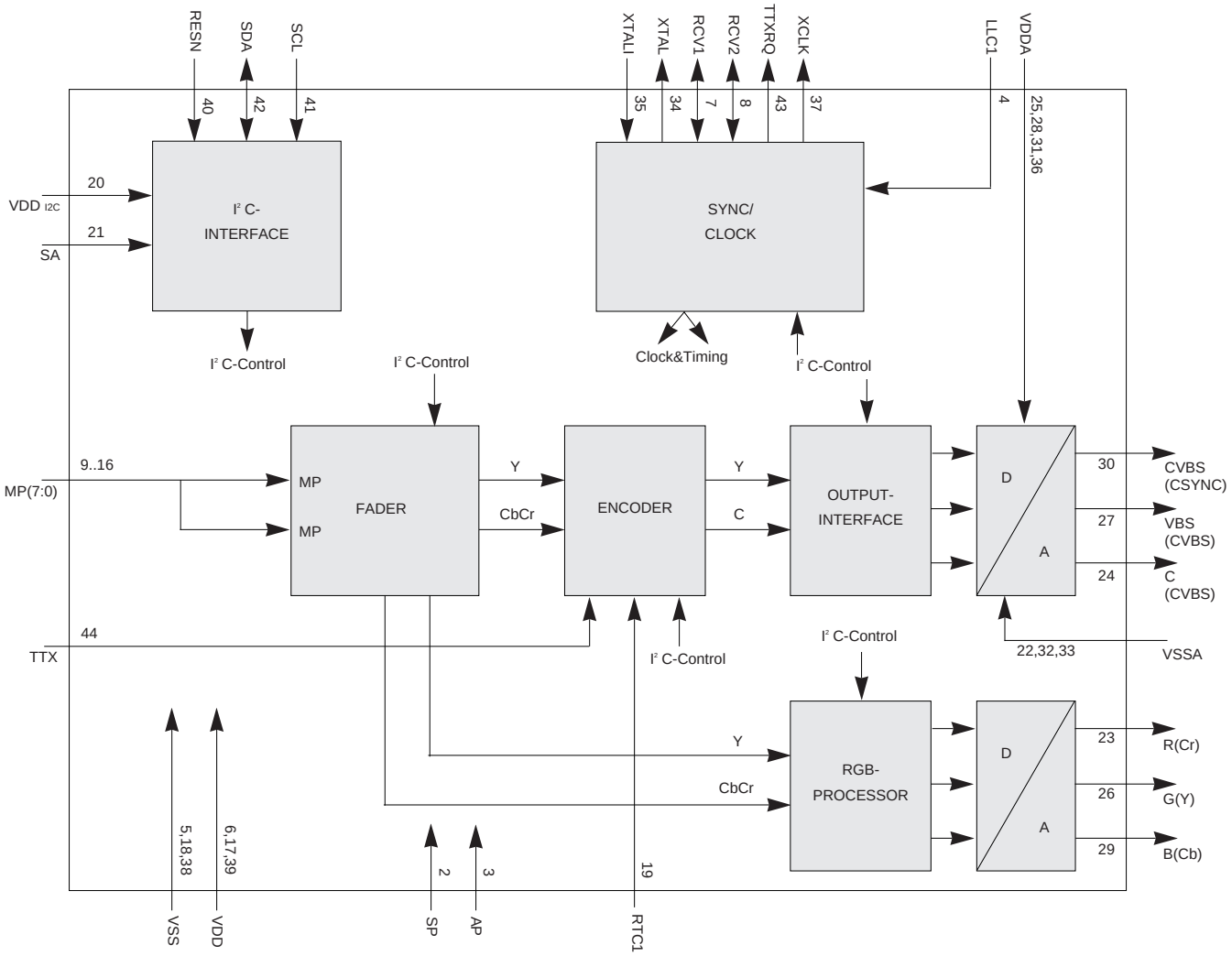


LOGIC DIAGRAM



2-1-7 VIC50 (SAA7128 ; Digital Video Encoder)

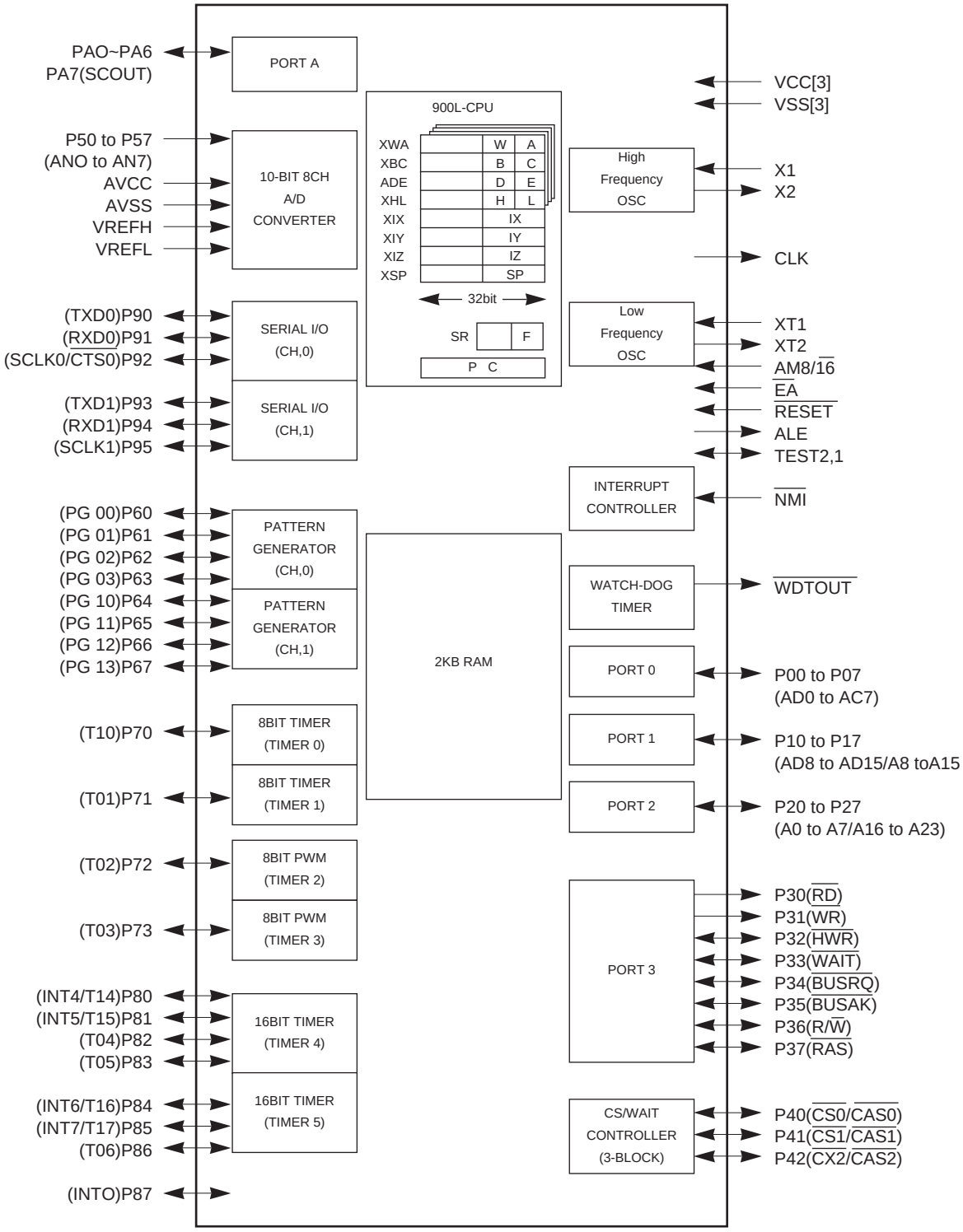
BLOCK DIAGRAM



PIN	I/O	NAME	FUNCTION
1		res.	Reserved pin, do not connect
2	I	SP	Test Pin;connected to digital ground for normal operation
3	I	AP	Test Pin;connected to digital ground for normal operation
4	I	LLC1	Line-Locked Clock input;this is the 27 MHz master clock
5	I	V_{SS1}	Digital supply ground 1
6	I	V_{DD1}	Digital supply 1
7	I/O	RCV1	Raster Contral 1 for video port. This pin receives/provides a VS/FS/FSEQ signal.
8	I/O	RCV2	Raster Contral 2 for video port. This pin provides an HS pulse of programmable length or receives an HS pulse.

PIN	I/O	NAME	FUNCTION
9	I	MP7	Double speed 54 MHzMPEG port. It is an input for "CCIR 656" style multiplexed Cb, Y, Cr data. Data are sampled on the rising and falling clock edge;data sampled on the risting edge then are sent to the encoding part of the device, data sampled on the falling edge are sent to the RGB part of the device. (or vice verse, depending on programming)
10	I	MP6	
11	I	MP5	
12	I	MP4	
13	I	MP3	
14	I	MP2	
15	I	MP1	
16	I	MP0	
17	I	V_{DD2}	Digital supply voltage 2
18	I	V_{SS2}	Digital ground 2
19	I	RTCI	Real Time Control input. If the LLC1 clock is provided by an SAA7111 or SAA7151B, RTCI should be connected to the RTCO pin of the respective decoder to improve the signal quality.
20	I	VDD_{12C}	Sense input for 12C bus voltage;connect to 12C bus supply
21	I	SA	Select 12C address; low selects slave address 88h, high selects slave address 8Ch.
22	I	V_{SSA1}	Analog ground 1 for Red (Cr), C(CVBS), Green(Y) outputs
23	O	R(Cr)	Analog output of Red (Cr)signal
24	O	C	Analog output of Chrominance (CVBS) signal
25	I	V_{DDA1}	Analog supply voltage 1 for R(Cr), C(CVBS) outputs
26	O	G(Y)	Analog output of Green(Y) signal
27	O	VBS	Analog output of VBS (CVBS) signal
28	I	V_{DDA2}	Analog supply voltage 2 for VBS(CVBS), Green(Y) outputs
29	O	B(Cb)	Analog output of Blue(Cb) signal
30	O	CVBS	Analog output of CVBS(CSYNC) signal
31	I	V_{DDA3}	Analog supply voltage 3 for Blue(Cb)and CVBS(CSYNC), outputs
32	I	V_{SSA2}	Analog ground 2 for VBS (CVBS), Blue(Cb), CVBS(CSYNC)outputs
33	I	V_{SSA3}	Analog ground 3 for the DAC reference ladder and the oscillator
34	O	XTAL	Crystal oscillator output
35	I	XTAL1	Crystal oscillator input; if the oscillator is not used, this pin should be connected to ground.
36	I	V_{DDA4}	Analog supply voltage 4 for the DAC reference ladder and the oscillator
37	O	XCLK	Clock output of the crystal oscillator
38	I	V_{SS3}	Digital supply ground 3
39	I	V_{DD3}	Digital supply 3
40	I	RESN	Reset input, active LOW. After reset is applied, all digital I/Os are in input mode; PAL-Blackburst on CVBS, VBS and C;RGB outputs set to lowest voltage. The 12C-bus receiver waits for the START condition.
41	I	SCL	12C serial clock input
42	I/O	SDA	12C serial data input/output
43	O	TTXRQ	Teletext Request output, indicating when text bits are requested
44	I	TTX	Teletext bit stream input

2-1-8 MIC1 (TMP93CM41F ; Main Micom)



No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
1	VREFL	GND	I	A/D Ref input (L)
2	AVss	AGND	-	A/D GND input
3	AVcc	AVCC	-	A/D VCC input
4	/NMI	-	I	Non-maskable interrupt
5	P70	ZRST	O	DSP H/W reset
6	P71	MCK_SEL	O	Master clock select
7	P72	ZIVA_RST	O	AV-DEC H/W reset
8	P73	LED	O	Open/close blinking
9	/INT4	DVDINT	I	Interrupt from AV-DEC
10	INT5	SRQ	I	Interrupt from front micom
11	P82	OPEN	I	Open switch
12	P83	CLOSE	I	Close switch
13	/INT6	FGINT	I	Interrupt from spindle motor FG
14	INT7	-	I	
15	P86	RRQ	O	Request to front micom
16	INTO	ZINT	I	Interrupt from DSP
17	TXDO	RXD	O	Serial data output
18	RXDO	TXD	I	Serial data input
19	SCLKO	SCLK	I	Serial data clock
20	TXD1	MD	O	RF control data
21	094	STB	I/O	RF data latch
22	SCLK1	MC	O	RF control clock
23	AM8/16	AM8	I	Address mode (H: 8 bit mode)
24	CLK	CLK	O	Clock output (System clock÷2)
25	Vcc	VCC	-	
26	Vss	GND	-	GND
27	X1	X1	I	High frequency OSC in
28	X2	X2	O	High frequency OSC out
29	/EA	/EA	I	External access CS41/CS40
30	/RESET	/MRST	I	Master reset from FRONT

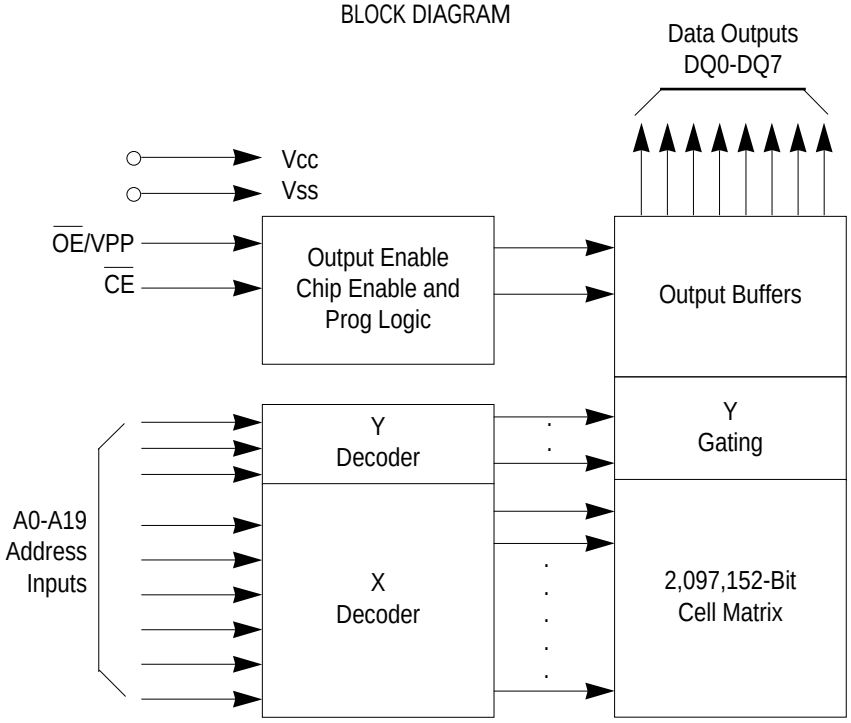
No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
31	P96	XT1	O	-
32	P97	XT2	O	-
33	TEST1	TEST1	-	Test pin. connect to TEST2
34	TEST2	TEST2	-	Test pin. connect to TEST1
35	PA0	ECK	O	EEPROM CLOCK
36	PA1	EDT	I/O	EEPROM DATA I/O
37	PA2	EWC	O	EEPROM WRITE PROTECT
38	PA3	-	O	
39	PA4	-	O	
40	PA5	-	O	
41	PA6	-	O	
42	PA7	-	O	
43	ALE	ALE	O	Address latch enable
44	Vcc	VCC	-	
45	AD0	HAD0	I/O	Address/Data 0
46	AD1	HAD1	I/O	Address/Data 1
47	AD2	HAD2	I/O	Address/Data 2
48	AD3	HAD3	I/O	Address/Data 3
49	AD4	HAD4	I/O	Address/Data 4
50	AD5	HAD5	I/O	Address/Data 5
51	AD6	HAD6	I/O	Address/Data 6
52	AD7	HAD7	I/O	Address/Data 7
53	A8	HA8	O	Address 8
54	A9	HA9	O	Address 9
55	A10	HA10	O	Address 10
56	A11	HA11	O	Address 11
57	A12	HA12	O	Address 12
58	A13	HA13	O	Address 13
59	A14	HA14	O	Address 14
60	A15	HA15	O	Address 15

No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
61	/WDTOUT	WDTOUT	O	Watch dog timer output
62	VSS	GND	-	
63	Vcc	VCC	-	
64	A16	HA16	O	Address 16
65	A17	HA17	O	Address 17 (AV-DECODER)
66	A18	HA18	O	Address 18 (Data processor)
67	A19	HA19	O	Address 19
68	A20	HA20	O	Address 20 (D. SERVO)
69	A21	HA21	O	Address 21
70	A22	HA22	O	Address 22
71	A23	HA23	O	Address 23
72	/RD	/RD	O	/Read strobe
73	/WR	/WR	O	/Write strobe
74	P32	-	I/O	
75	/WAIT	/MWAIT	I	/Wait
76	P34	RCODE	I/O	
77	P35	-	I/O	
78	P36	-	O	
79	P37	-	I/O	
80	P40/CS0	-	O	
81	/CS1	/CS1	-	Chip select 1 (SRAM, 1M Bit, 128KB)

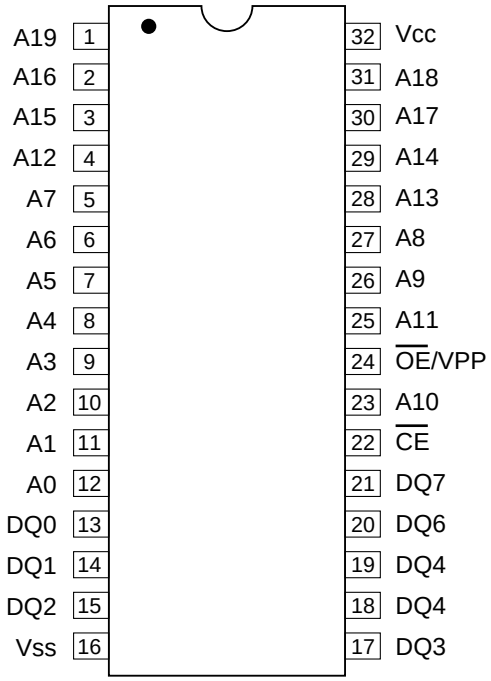
No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
82	/CS2	/CS2	O	Chip slect 2 (EPROM, 4M Bit, 512KB)
83	P60	-	I/O	
84	P61	TRAY-IN	O	Tray in control output
85	P62	TRAY-OUT	O	Tray out control output
86	P63	SCL	O	IIC clock (VIDEO ENCODER)
87	P64	SDA	I/O	IIC clock (VIDEO ENCODER)
88	P65	DAB	O	D.Servo IC data/Address select
89	P66	CSB	O	D.Servo IC chip select
90	P67	RSTB	O	D.Servo IC reset
91	Vss	GND	-	
92	P50	SLOCK		LOCK monitor from DSP
93	P51	TILTO	I	Monitor signal
94	P52	FR	I	Spindle direction from SP driver
95	P53	SENSE	I	SENSE monitor from SERVO
96	P54	FOKB	I	Focus lock monitor from RF
97	P55	RFRP1	I	Tracking lock monitor from SERVO
98	P56	RFO	I	RF sum signal
99	P57	VREFO	I	
100	VREFH	AVCC	I	A/D Ref input (H)

2-1-9 MIC8 (M27C801 ; 8MB (1M x 8-bit) CMOS EPROM)

BLOCK DIAGRAM



TOP VIEW



NAME	FUNCTION
A0-A19	Address Inputs
$\overline{CE}$	Chip Enable Input
DQ0-DQ7	Data Input/Outputs
$\overline{OE}$	Output Enable Input
Vcc	Vcc Syply Voltage
Vss	Ground

2-1-10 FIC2 (LC866232 ; Front Micom)

No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
1	P52	MRST	O	Front end reset
2	PWM1	-	-	
3	P20	DFS	O	D/A Control
4	P21	DEMOO	O	D/A Control
5	P22	DEMO1	O	D/A Control
6	P23	DARST	O	D/A Control
7	P24	DIF0	O	D/A Control
8	P25	DIF1	O	D/A Control
9	P26	DIF2	O	D/A Control
10	P27	DARST1	O	D/A Control
11	TEST1	-	-	
12	*RES		I	Reset
13	XT1	GND		Low frequency OSC in
14	XT2	-		Low frequency OSC out
15	VSS	GND		
16	CF1	-		High frequency OSC in
17	CF2	-		High frequency OSC out
18	VDD	VDD		
19	AN0/P80	ECHO_VR	I	ECHO volume A/D input
20	AN1/P81	MIC_DET	I	MIC detect
21	AN2/P82	-	I	
22	AN3/P83	MODE0	I	HARDWARE MODE SELECT
23	AN4/P84	MODE1	I	HARDWARE MODE SELECT
24	AN5/P85	MODE2	I	HARDWARE MODE SELECT
25	AN6/P86	MODE3	I	HARDWARE MODE SELECT
26	AN7/P87	MODE4	I	HARDWARE MODE SELECT
27	P70/INT0	RRQ	I	Request to front micom
28	P71/INT1	-	I	
29	P72/INT2	-	I	
30	P73/INT3	REMOCON	I	REMOCON data in

No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
31	S0/T0	GRID8	O	FLT GRID CONTROL
32	S1/T1	GRID7	O	FLT GRID CONTROL
33	S2/T2	GRID6	O	FLT GRID CONTROL
34	S3/T3	GRID5	O	FLT GRID CONTROL
35	S4/T4	GRID4	O	FLT GRID CONTROL
36	S5/T5	GRID3	O	FLT GRID CONTROL
37	S6/T6	GRID2	O	FLT GRID CONTROL
38	S7/T7	GRID1	O	FLT GRID CONTROL
39	S8/T8	-	O	
40	S9/T9	-	O	
41	S10/T10	-	O	
42	S11/T11	SEG21	O	FLT SEGMENT CONTROL
43	S12/T12	SEG20	O	FLT SEGMENT CONTROL
44	S13/T13	SEG19	O	FLT SEGMENT CONTROL
45	S14/T14	SEG18	O	FLT SEGMENT CONTROL
46	S15/T15	SEG17	O	FLT SEGMENT CONTROL
47	VDD	+5V	-	
48	VP	-28V	-	
49	S16	SEG16	O	FLT SEGMENT CONTROL
50	S17	SEG15	O	FLT SEGMENT CONTROL
51	S18	SEG14	O	FLT SEGMENT CONTROL
52	S19	SEG13	O	FLT SEGMENT CONTROL
53	S20	SEG12	O	FLT SEGMENT CONTROL
54	S21	SEG11	O	FLT SEGMENT CONTROL
55	S22	SEG10	O	FLT SEGMENT CONTROL
56	S23	SEG9	O	FLT SEGMENT CONTROL
57	S24	SEG8	O	FLT SEGMENT CONTROL
58	S25	SEG7	O	FLT SEGMENT CONTROL
59	S26	SEG6	O	FLT SEGMENT CONTROL
60	S27	SEG5	O	FLT SEGMENT CONTROL

No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
61	S28	SEG4	O	FLT SEGMENT CONTROL
62	S29	SEG3	O	FLT SEGMENT CONTROL
63	S30	SEG2	O	FLT SEGMENT CONTROL
64	S31	SEG1	O	FLT SEGMENT CONTROL
65	P00	KEY0	I	KEY SCAN
66	P01	KEY1	I	KEY SCAN
67	P02	KEY2	I	KEY SCAN
68	P03	GND	I	
69	P04	-	O	
70	P05	-	O	
71	P06	-	O	
72	P07	SRQ	O	Request to MAIN Micom
73	P10/SO0	TXD	O	SERIAL DATA OUT
74	P11/SI0	RXD	I	SERIAL DATA IN
75	P12/SCK0	SCLK	O	SERIAL CLOCK
76	P13/SO1	-		
77	P14/SI1	-		
78	P15/SCK1	-		
79	P16/BUZ	-		
80	P17/PWM0			

No	PORT NAME	ASSIGNED NAME	I/O	FUNCTION
81	P30	S1	I	SHUTTLE DATA
82	P31	S2	I	SHUTTLE DATA
83	P32	S3	I	SHUTTLE DATA
84	P33	S4	I	SHUTTLE DATA
85	P34	J1	I	JOG DATA
86	P35	J2	I	JOG DATA
87	P36	AT	I	TV TYPE
88	P37	AD	I	TV TYPE
89	VSS	+5 V	-	
90	VDD	GND	-	
91	P40	RGBCTL	O	SCART CONTROL
92	P41	SCON_B	O	SCART CONTROL
93	P42	-	O	
94	P43	WIDE	O	SCART CONTROL
95	P44	AMUTE3	O	SUB WOOPER MUTE
96	P45	AMUTE2	O	CENTER MUTE
97	P46	AMUTE1	O	REAR MUTE
98	P47	AMUTE0	O	FRONT MUTE
99	P50	LED	O	STANDBY LED
100	P51	ON/OFF	O	POWER ON/OFF CONTROL

MEMO

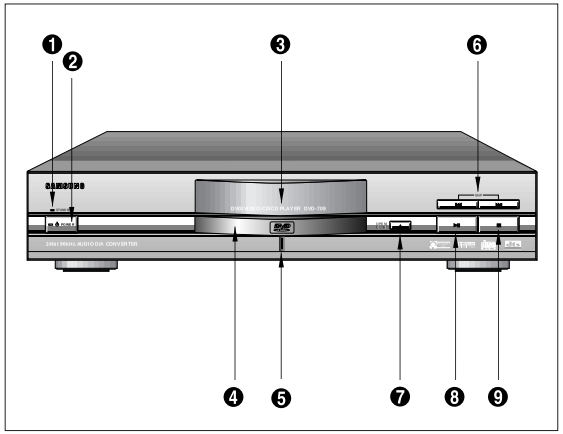
3. Product Specifications

GENERAL	Power Requirements	AC 120V, 60Hz
	Power Consumption	18W
	Weight	7.5lbs
	Dimensions	W 16.9 in X D 11.0 in X H 3.5 in
	Operating Temperature Range	+41°F ~ +95°F
	Operating Humidity Range	10% to 75%
DISC	DVD (Digital Versatile Disc)	Reading Speed : 11.45 ft/sec.
		Approx. Play Time (Single Sided, Single Layer Disc) : 135 min.
	CD : 5 inches (Compact Disc)	Reading Speed : 3.9 to 4.6 ft/sec.
		Maximum Play Time : 74min.
	CD : 3 1/2 inches (Compact Disc)	Reading Speed : 3.9 to 4.6 ft/sec.
		Maximum Play Time : 20min.
	VCD : 5 inches	Reading Speed : 3.9 to 4.6 ft/sec.
		Maximum Play Time : 74min. (Video + Audio)
Video Output	Component Video	1 channel : 1.0Vp-p (75ohm load)
	Component Video	Y : 1.0Vp-p (75ohm load)
		Pr : 0.70Vp-p (75ohm load)
		Pb : 0.70Vp-p (75ohm load)
	S-Video	Luminance Signal : 1Vp-p (75ohm load)
		Color Signal : 0.286Vp-p (75ohm load)
Audio Output	2 channel	L, R
	Output Level	Analog : 2Vrms (1KHz)
		Digital : 0.50Vp-p
	* Frequency Response	48KHz Sampling : 4Hz to 22 KHz
		96KHz Sampling : 4Hz to 44KHz
	* S/N Ratio	110dB
	* Dynamic Range	96dB
	* Total Harmonic Distortion	0.003%

* : Nominal specification

MEMO

Description-Front Panel



Front Panel Controls

❶ **STANDBY LAMP**
- When the unit is first plugged in, the indicator lights. When power is pressed on, the lamp goes out.

❷ **POWER**
- Use to turn the power on and off.

❸ **DISPLAY** (See below)
- Operation indicators are displayed here.

❹ **DISC TRAY**
- Press OPEN/CLOSE to open and close the disc tray.

❺ **GREEN LAMP**

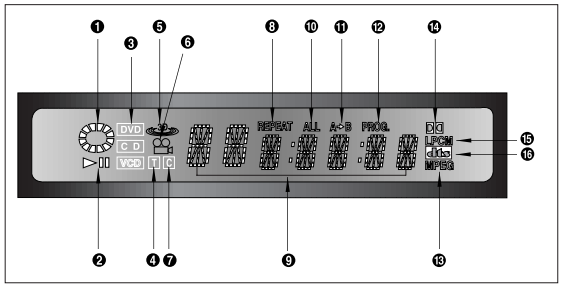
❻ **SKIP/SEARCH**
- Use to skip or search a scene or music.

❼ **OPEN/CLOSE**
- Press to open and close the disc tray.

❽ **PLAY/PAUSE**
- Begin or pause disc play.

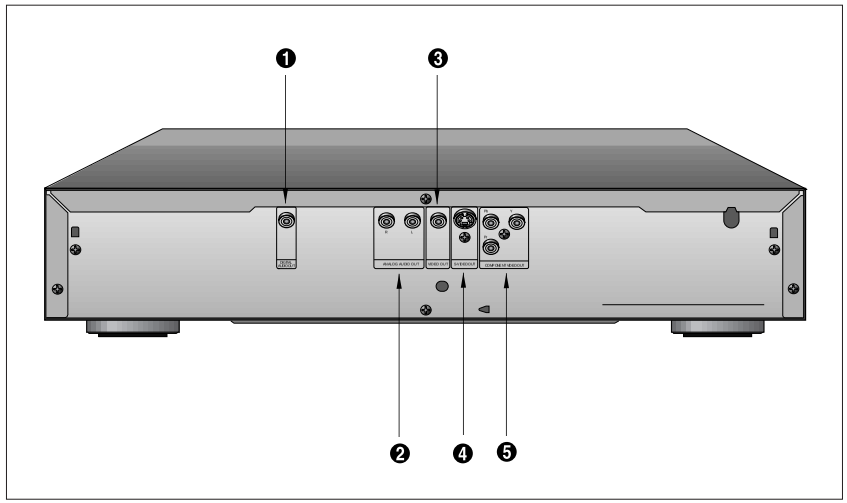
❾ **STOP**
- Stops disc play.

Front Display



❶ **DISC OPERATION ROTARY INDICATOR**
❷ **OPERATION INDICATOR**
❸ **DISC TYPE INDICATOR**
❹ **TRACK INDICATOR**
❺ **3D SOUND INDICATOR**
❻ **ANGLE INDICATOR**
❼ **CHAPTER INDICATOR**
❽ **REPEAT INDICATOR**
❾ **CHAPTER, TITLE, TRACK & MESSAGE INDICATOR**
❿ **ALL REPEAT INDICATOR**
⓫ **A-B REPEAT INDICATOR**
⓬ **PROGRAM PLAY INDICATOR**
⓭ **MPEG INDICATOR**
⓮ **DOLBY DIGITAL INDICATOR**
⓯ **LINEAR PCM INDICATOR**
⓰ **DTS INDICATOR**

Description-Rear Panel



Rear Panel

❶ DIGITAL AUDIO OUT JACK
- Use a coaxial digital cable to connect to an A/V Amplifier that contains a Dolby Digital decoder or DTS decoder.

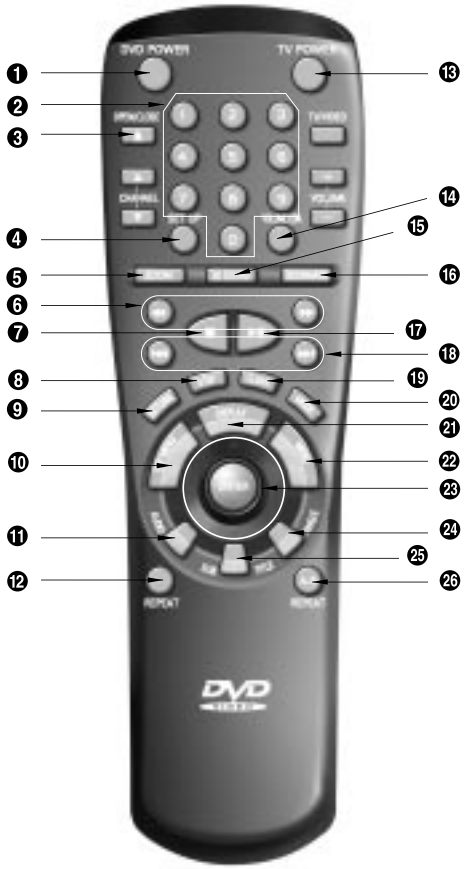
❷ ANALOG AUDIO OUT JACKS
- Connect to the Audio input jacks of your television, audio/video receiver, or VCR.

❸ VIDEO OUT JACK
- Use a video cable to connect this jack to the Video input on your television.

❹ S-VIDEO OUT JACK
- Use the S-Video cable to connect this jack to the S-Video jack on your television for a higher quality picture.

❺ COMPONENT VIDEO OUT JACKS
- Use these jacks if you have a TV with component video in jacks. These jacks provide Pr, Pb and Y video. Along with S-Video, Component Video provides the best picture quality.

A Tour of the Remote Control



DVD Function Buttons

❶ **DVD POWER Button**
❷ **NUMBER Buttons**
❸ **OPEN/CLOSE Button**
❹ **SETUP Button**
• Brings up the DVD player's Setup menu.
❺ **ZOOM Button**
❻ **SEARCH Buttons**
• Allows you to search forward/backward through a disc.
❼ **STOP Button**
❽ **STEP Button**
• Advances playback one frame at a time.
❾ **RETURN Button**
• Returns to a previous menu.
❿ **TOP MENU Button**
• Accesses a music or video display directly.
⓫ **AUDIO Button**
• Use this button to access various audio functions on a disc.
⓬ **REPEAT Button**
• Allows you to repeat play a title, chapter, track, or disc.
⓭ **TV POWER Button**
• Use to set the remote to control a compatible TV.
⓮ **VOLUME CON. Button**
• To control the master volume of the player.
⓯ **3D SOUND Button**
⓰ **BOOKMARK Button**
⓱ **PLAY/PAUSE Button**
• Begin/Pause disc play.
⓲ **SKIP Buttons**
• Use to skip the title, chapter, or track.
⓳ **CLEAR Button**
• Use to remove menus or status displays from the screen.
⓴ **MODE Button**
• Allows you to program a specific order.
㉑ **DISPLAY Button**
• Displays the current disc mode.
㉒ **MENU Button**
• Brings up the Disc menu.
㉓ **ENTER/DIRECTION Button (UP/DOWN or LEFT/RIGHT Button)**
• This button functions as a toggle switch.
㉔ **ANGLE Button**
• Use to access various camera angles on a DVD.
㉕ **SUBTITLE Button**
㉖ **A-B REPEAT Button**
• Use to mark a segment to repeat between A and B.

A Tour of the Remote Control (Cont'd)

TV Function Buttons

❶ **TV POWER Button**
❷ **TV/VIDEO Selection Button**
❸ **CHANNEL UP/DOWN Buttons**
❹ **VOLUME UP/DOWN Buttons**

Install Batteries in the Remote

1. Open the battery cover on the back of the remote.
2. Insert two AA batteries. Make sure that the polarities (+ and -) are aligned correctly.
3. Replace the battery cover.

If remote doesn't operate properly:

- Check the polarity + - of the batteries (Dry-Cell)
- Check if the batteries are drained.
- Check if remote sensor is blocked by obstacles.
- Check if there is any fluorescent lighting nearby.

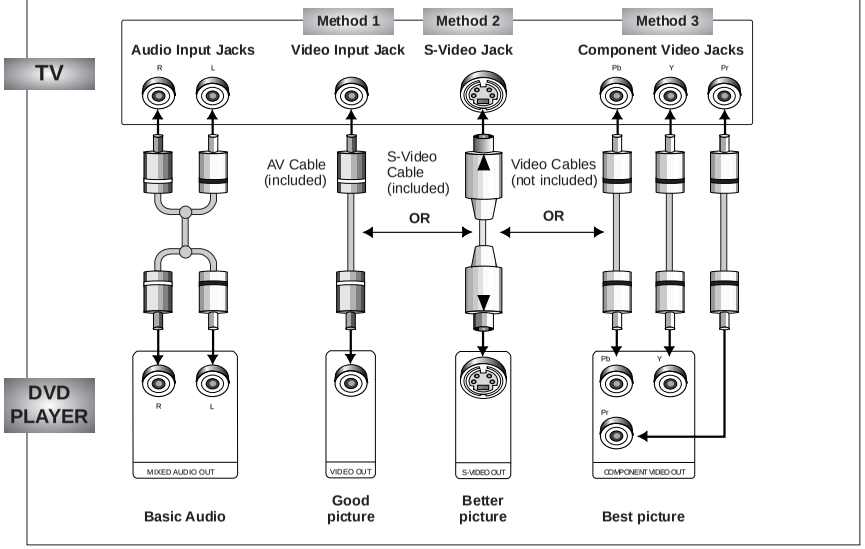
NOTE This ⊘ icon indicates an invalid button press.

Choosing a Connection

The following show examples of connections commonly used to connect the DVD player with a TV and other components.

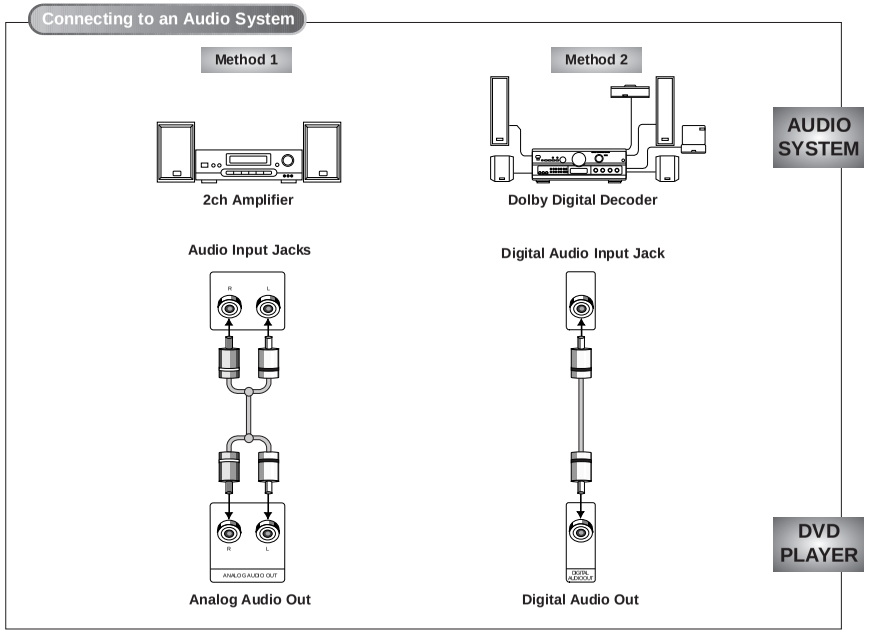
Before Connecting the DVD Player	Connecting to a TV (For Video)
• Always turn off the DVD player, TV, and other components before you connect or disconnect any cables. • Refer to owner's manual of the components you are connecting for more information on those particular components.	• **Method 1** DVD Player + TV with Video Input Jack • **Method 2** DVD Player + TV with S-Video Input Jack • **Method 3** DVD Player + TV with Component Video Jacks

Connecting to a TV

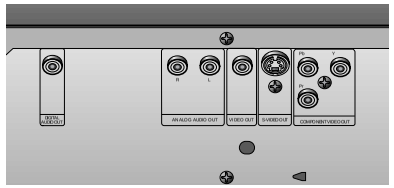


Choosing a Connection (Cont'd)

Connecting to an Audio System



Rear Panel



Connecting to an Audio System
• **Method 1** DVD Player + 2ch Stereo Amplifier or Dolby Pro Logic Decoder • **Method 2** DVD Player + Amplifier with Dolby Digital Decoder/DTS Decoder

MEMO

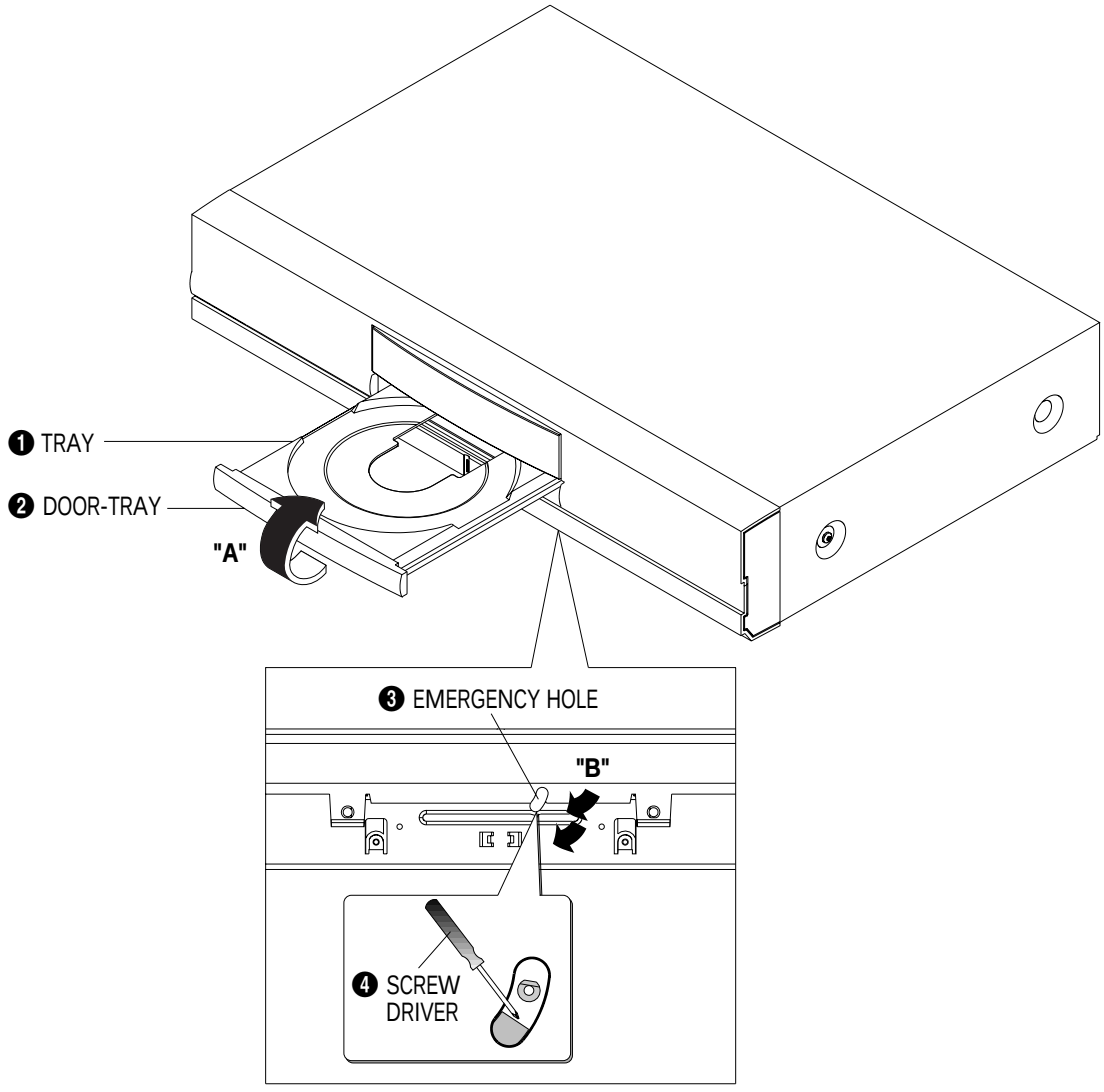
5. Disassembly and Reassembly

5-1 Cabinet and PCB

5-1-1 Door-Tray Removal

1) Supply power and open Tray ❶.
2) Disassemble the Door-Tray ❷ in direction of arrow "A".
3) Close Tray ❶ and power off.

Note : If Tray ❶ doesn't open, insert a Screw driver ❹ into the Emergency hole ❸(as shown in detailed drawing) and then turn it in the direction of arrow "B". Open Tray manually.



<Bottom View>

Fig. 5-1 Door-Tray Removal

5-1-2 Top Cabinet Removal

1) Remove 3 Screws ❶ on the back Top Cabinet.
2) Remove 2 Screws ❷, ❸ on the left and right side.
3) Lift up the Top Cabinet in direction of arrow.

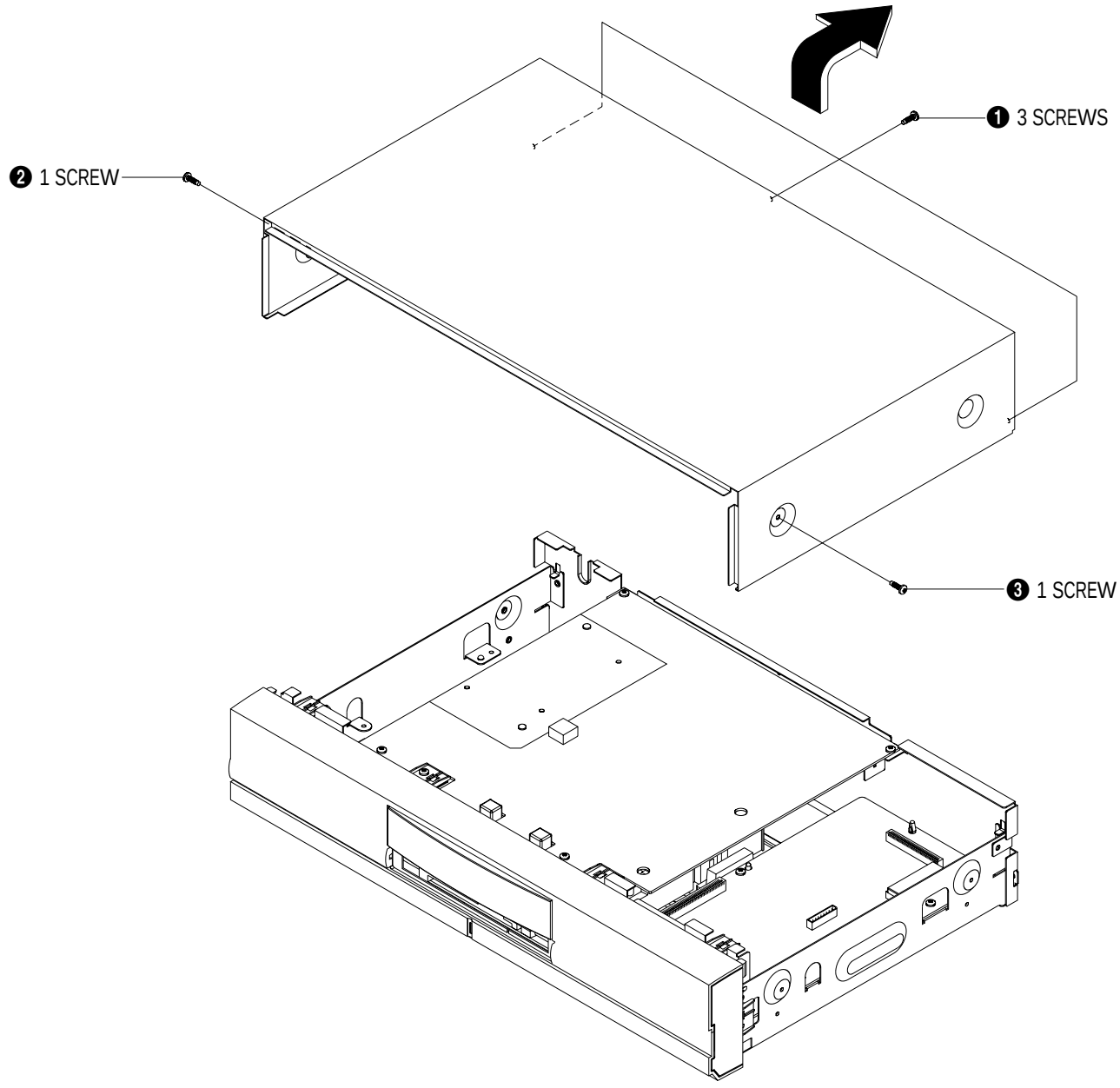


Fig. 5-2 Top Cabinet Removal

5-1-3 Ass'y Front-Panel, Power PCB, Play PCB Removal

1) Remove 2 Screws ❶ and Ass'y Front Panel ❷.
2) Remove 2 Screws ❸ and Power PCB ❹.
3) Remove 3 Screws ❺ and Play PCB ❻.

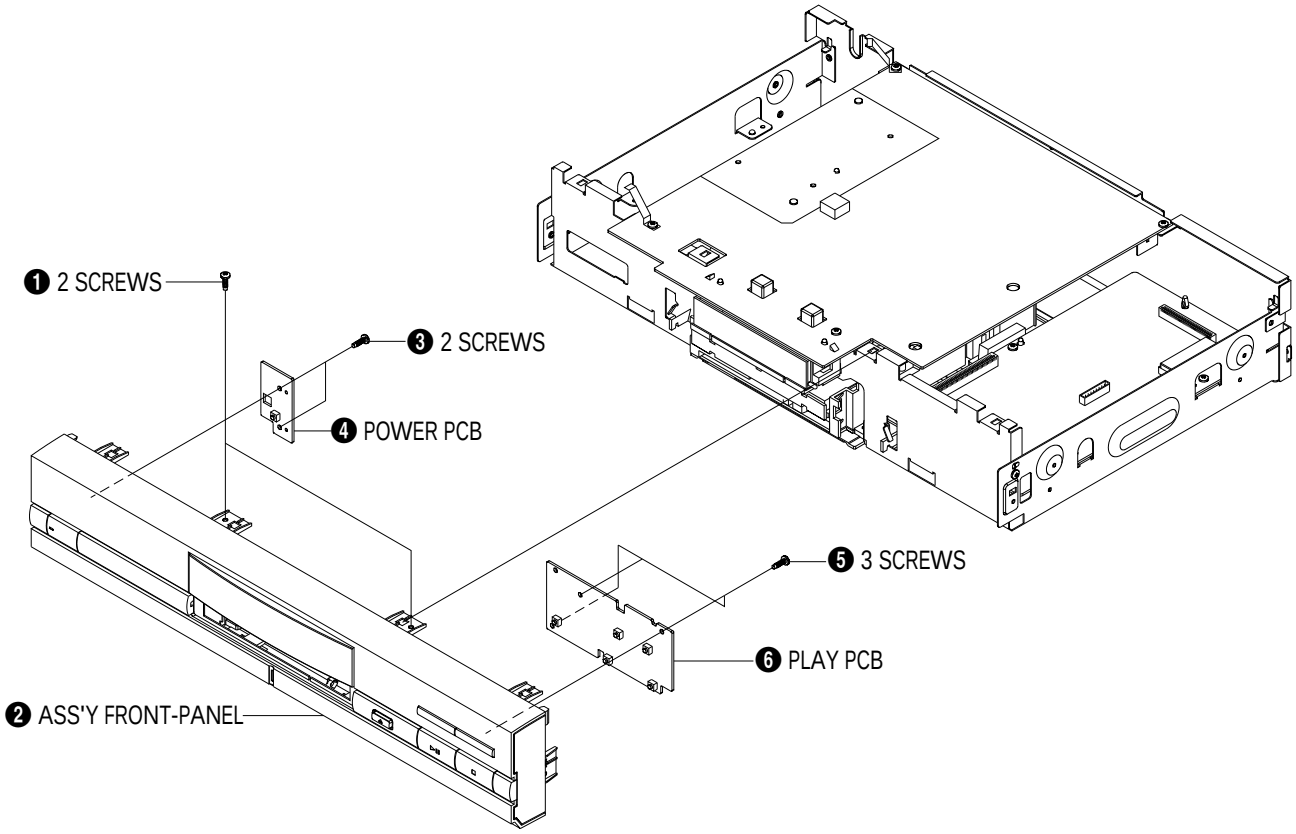


Fig. 5-3 Ass'y Front-Panel, Power PCB, Play PCB Removal

5-1-4 Main PCB, Jack PCB Removal

1) Remove 4 Screws ❶ and 1 Screw ❷.
2) Lift up the Jack PCB ❸.
3) Remove 3 Screws ❹ and lift up the Main PCB ❺.

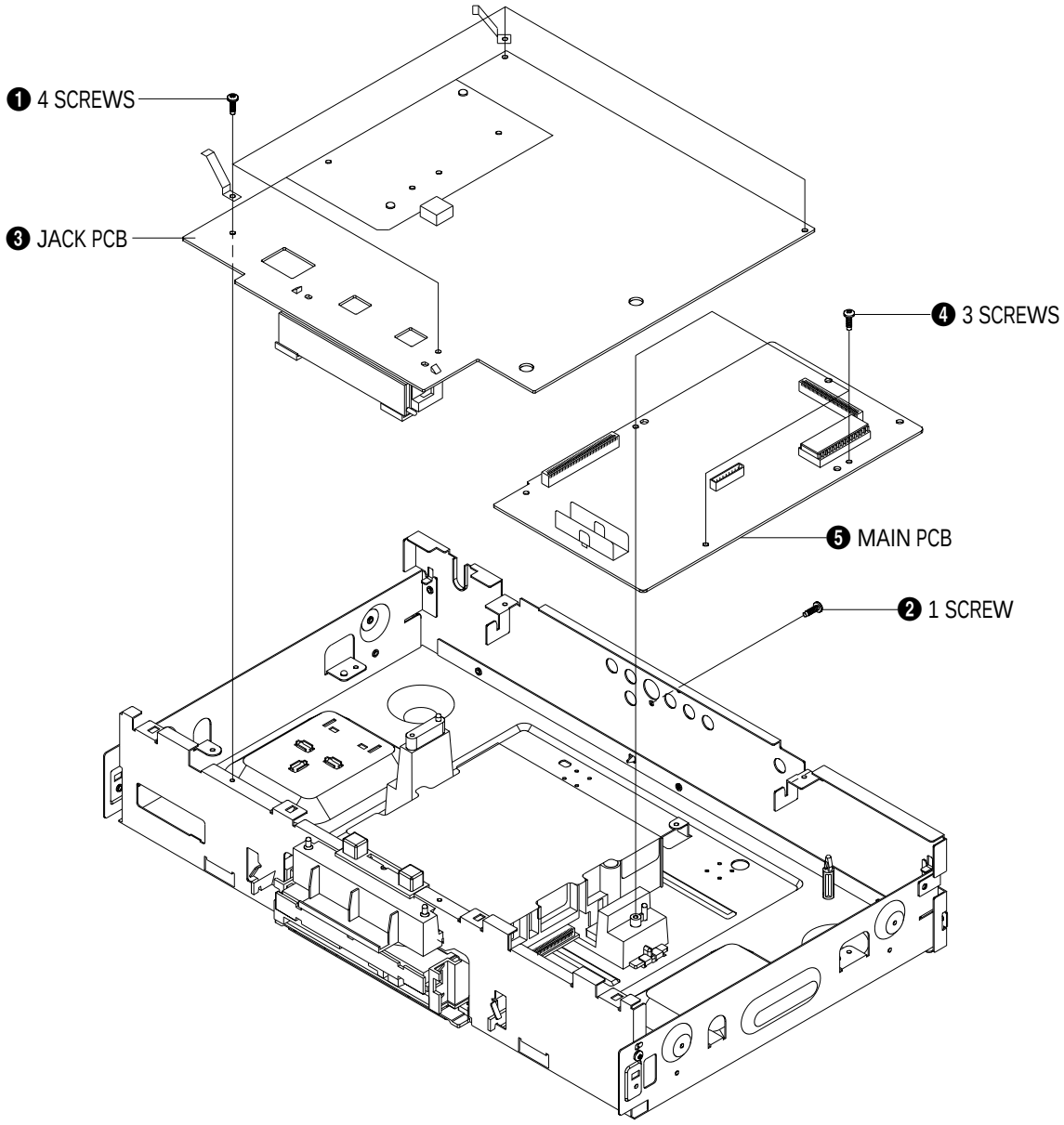


Fig. 5-4 Main PCB, Jack PCB Removal

5-1-5 Ass'y Deck Removal

1) Remove 4 Screws ❶ from the Ass'y Deck and lift it up.

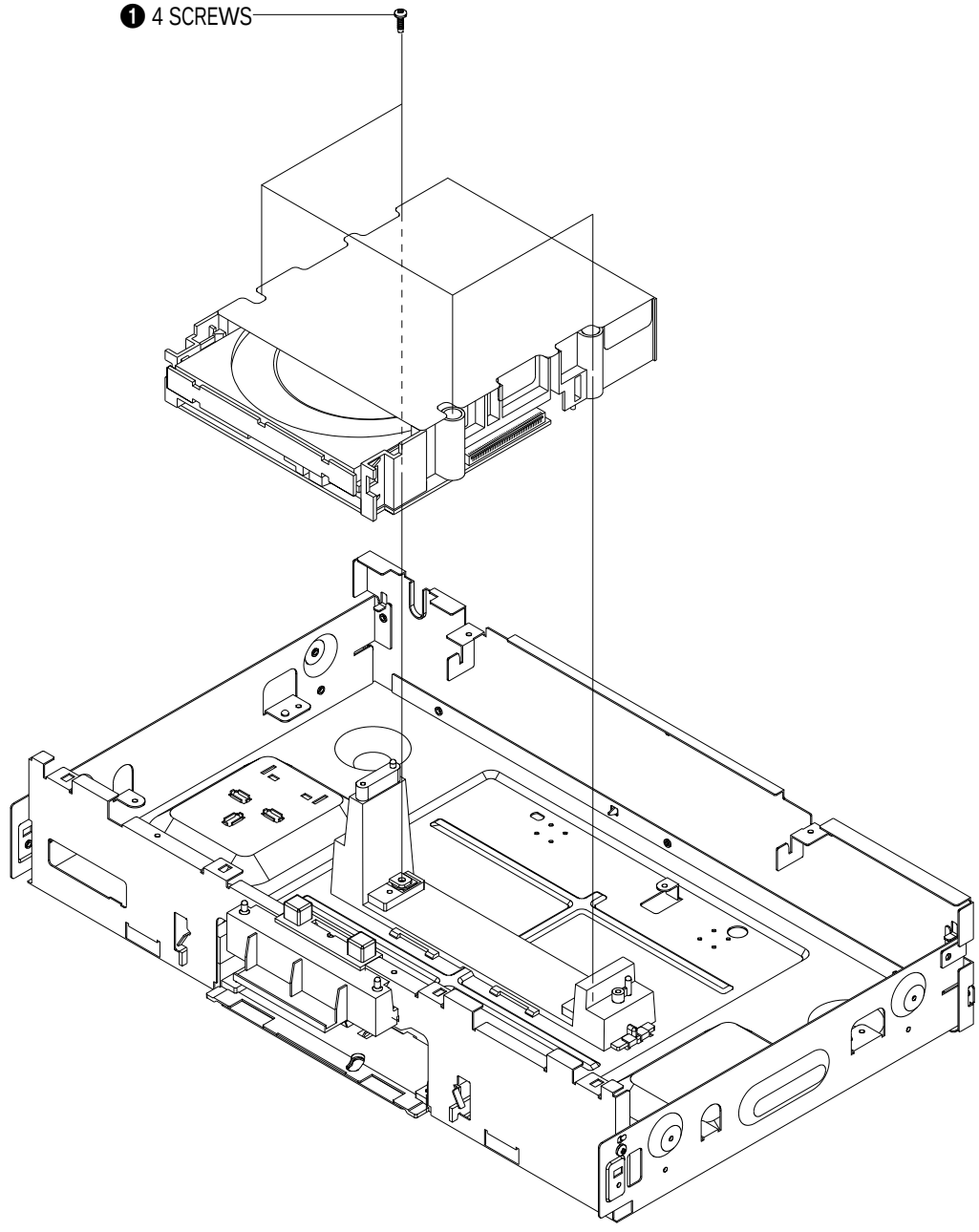


Fig. 5-5 Ass'y Deck Removal

5-2 PCB Location

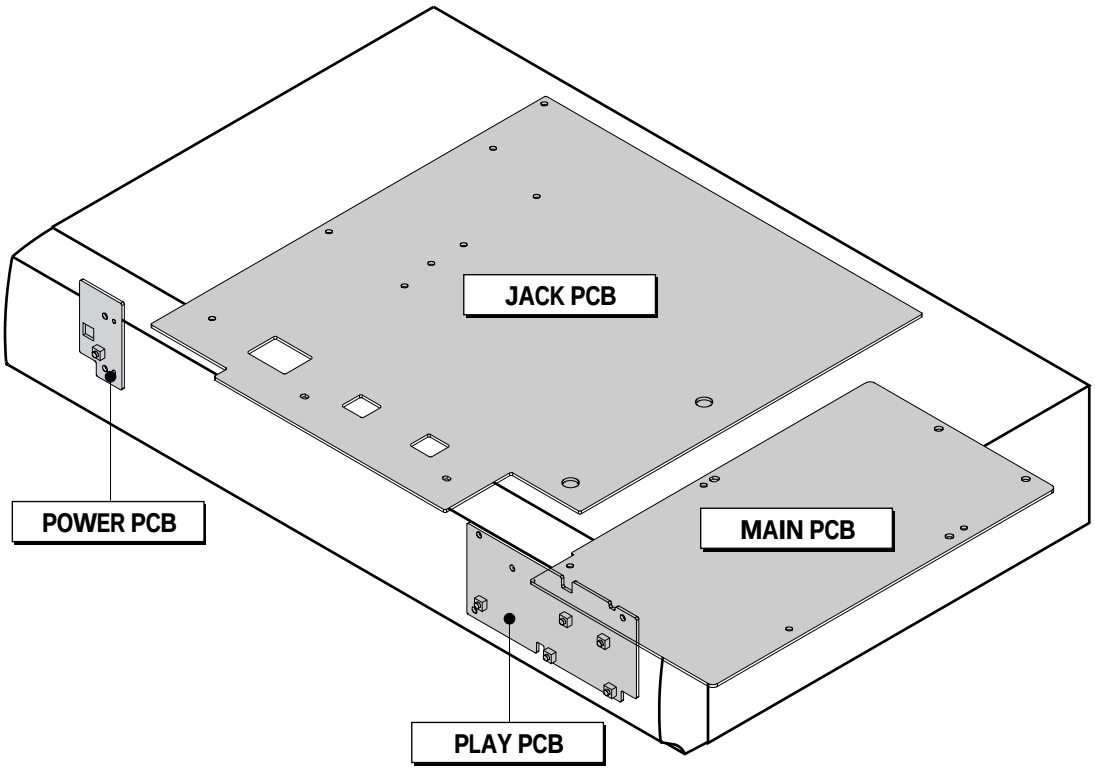
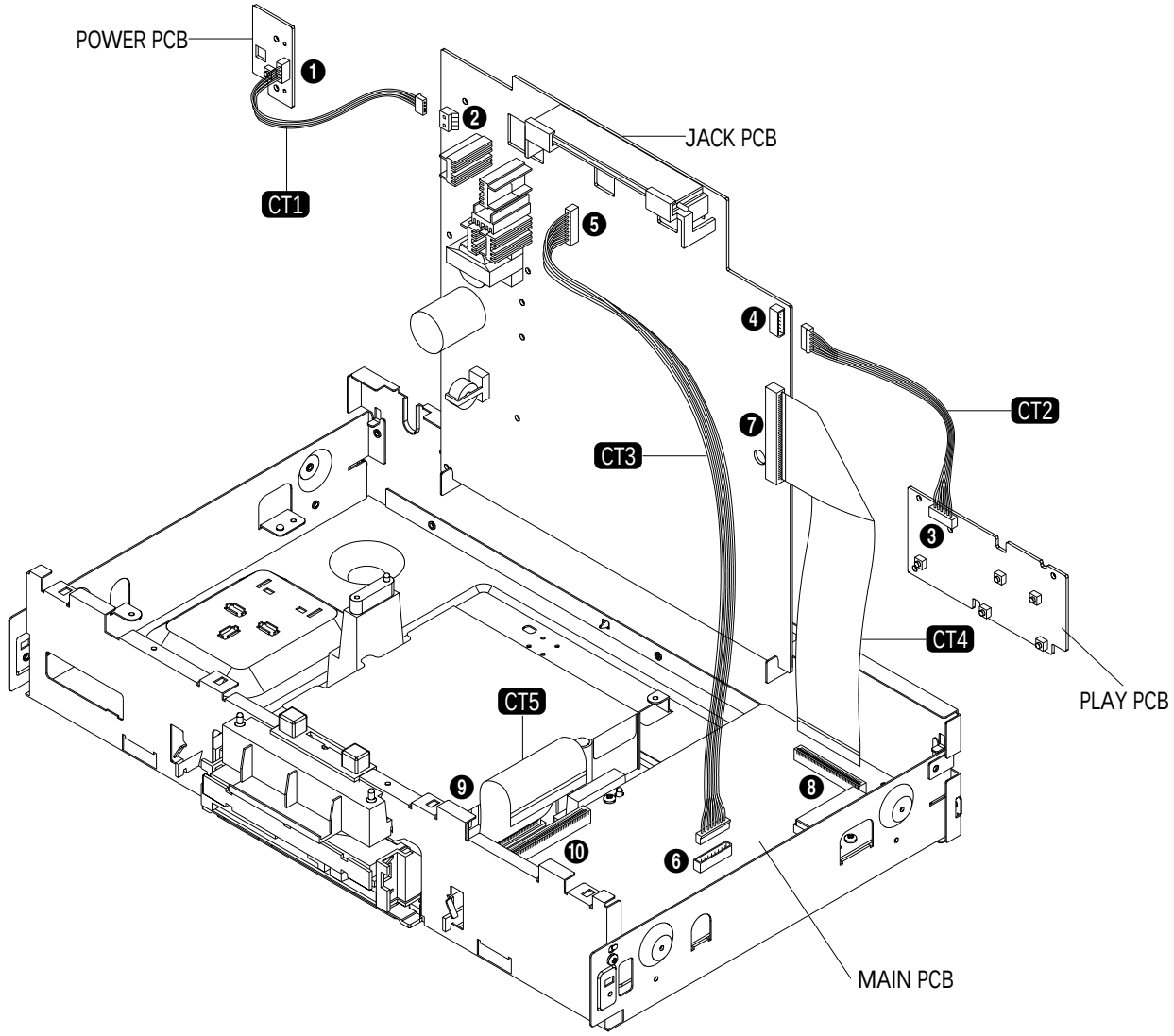


Fig. 5-6 PCB Location

5-3 Connector Diagram



NO.	CONNECTOR NO.	DIRECTION	CONNECTOR NO.
❶	KCN2	POWER PCB ◄ CT1 ► JACK PCB	CN18
❷	CN18	JACK PCB ◄ CT1 ► POWER PCB	KCN2
❸	CON22	PLAY PCB ◄ CT2 ► JACK PCB	CN16
❹	CN16	JACK PCB ◄ CT2 ► PLAY PCB	CON22
❺	CN12	JACK PCB ◄ CT3 ► MAIN PCB	CN7
❻	CN7	MAIN PCB ◄ CT3 ► JACK PCB	CN12
❼	CN11	JACK PCB ◄ CT4 ► MAIN PCB	CN8
❽	CN8	MAIN PCB ◄ CT4 ► JACK PCB	CN11
❾	CN5	DECK PCB ◄ CT5 ► MAIN PCB	CN6
❿	CN6	MAIN PCB ◄ CT5 ► DECK PCB	CN5

Fig. 5-7 Connector Diagram

5-4 Deck

5-4-1 Tray Removal

1) Remove 2 Screws ❶ and lift up the Cover Sheet ❷, Ass'y-Deck Clamper ❸.
2) Insert a Screw driver ❺ into Emergency hole ❹ and push it in the direction of arrow "A".
   When the Tray ❻ comes out a little, pull it in the direction of arrow "B" by hand.
3) Pull the Tray ❻ to disassemble, while simultaneously pushing the Hook ❼, ❽ in direction of arrow "A", "B".

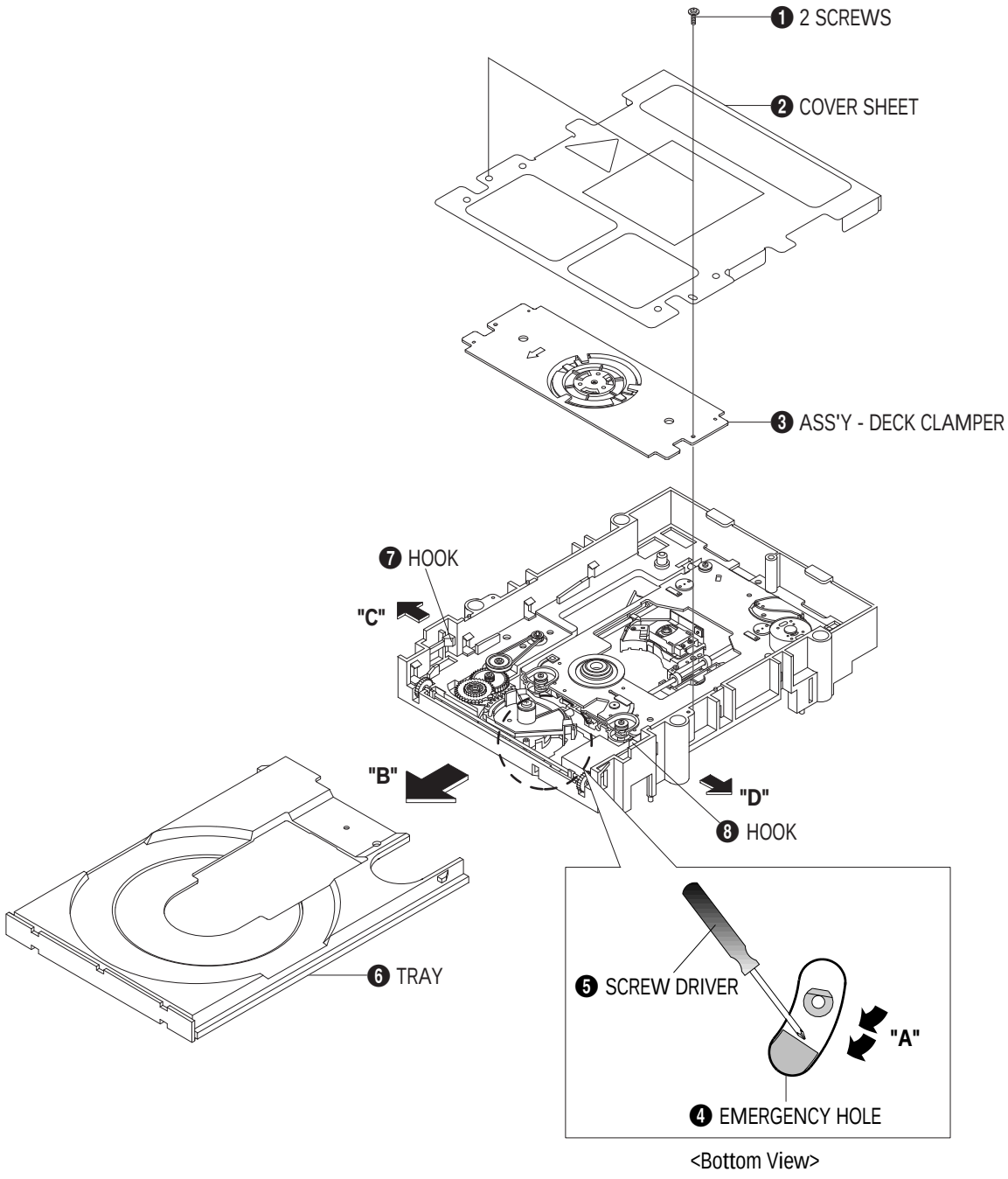


Fig. 5-8 Tray Removal

5-4-2 Ass'y-Deck Sub Removal

1) Remove 2 Screws ❶ and disassemble the Ass'y-PCB deck ❷.
2) Disassemble the Ass'y-Deck Sub ❹ in direction of arrow "B", while simultaneously pushing the Hook ❸ in direction of arrow "A".

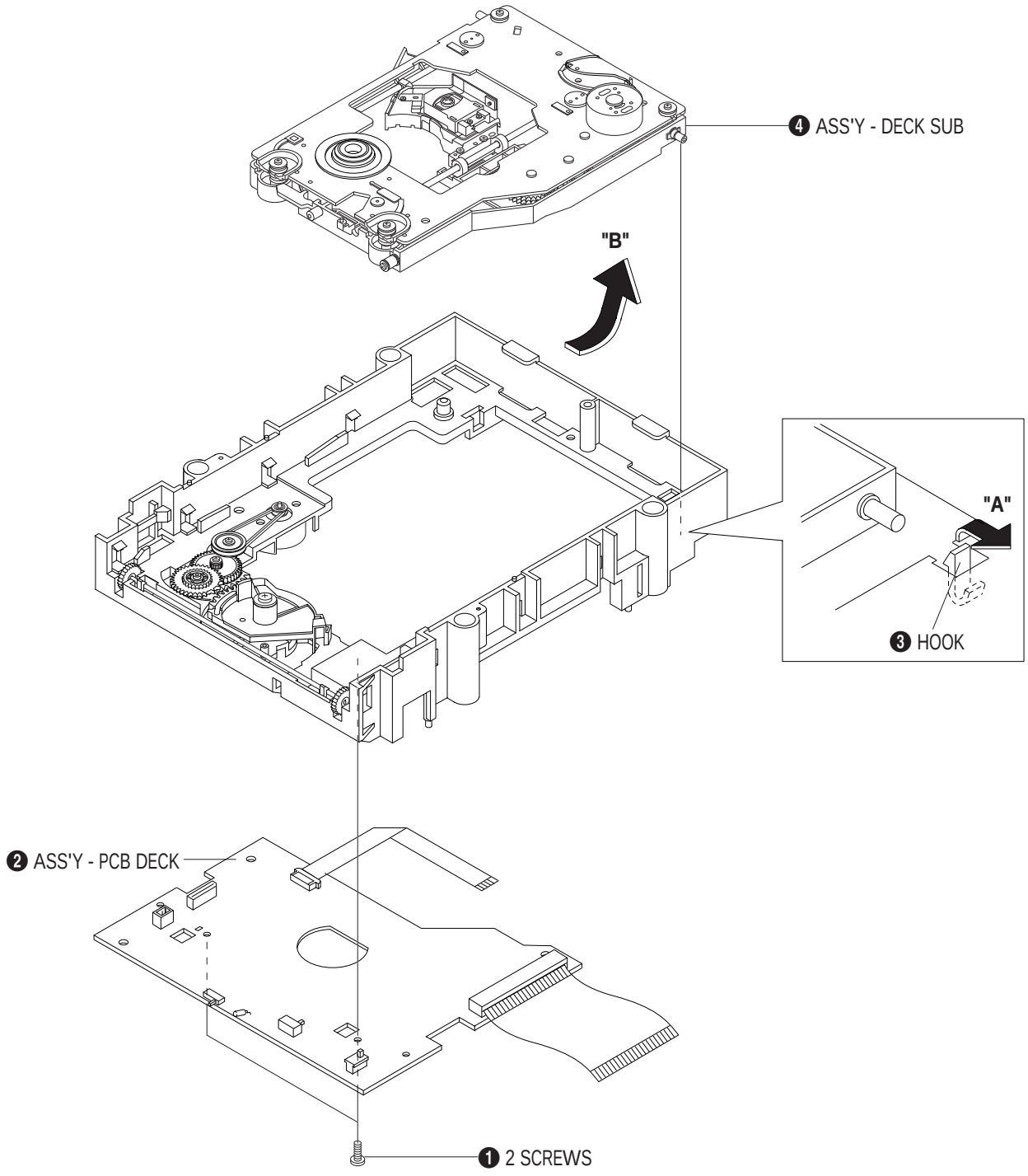


Fig. 5-9 Ass'y-Deck Sub Removal

5-4-3 Chassis-Main Parts Removal

1) Lift up the Gear-Tray ❶, remove 1 Screw ❷ and lift up the Gear-Cam Center ❸.
2) Lift up the Belt-Pulley ❹, remove 1 Screw ❺ and lift up the Pulley-Gear ❻.
3) Remove 1 Screw ❼ and lift up the Gear-Tray A ❽ and Gear-Cam Sub ❾.
4) Remove 2 Screws ❿ and disassemble the Ass'y-Motor Load ⓫.
5) Remove 1 Screw ⓬ and disassemble the Lever-Open S/W ⓭.
6) Lift up the Shaft-Syncro ⓮ and remove the 2 Gear-Syncro ⓯ in both directions.

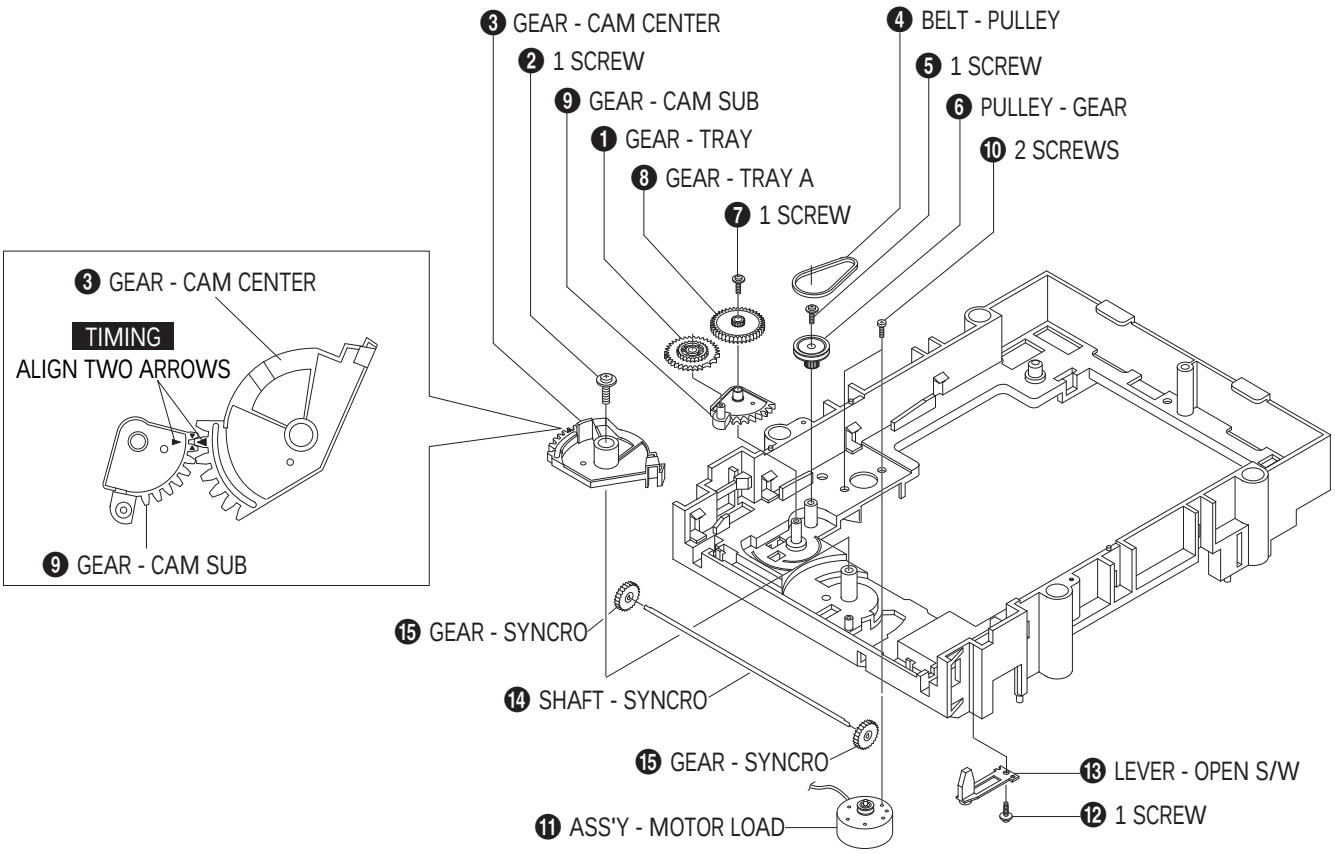


Fig. 5-10 Chassis-Main Parts Removal

5-4-4 Ass'y-Brkt Deck Removal

1) Remove 4 Screws ❶.
2) Lift up the Ass'y-Brkt Deck ❷.

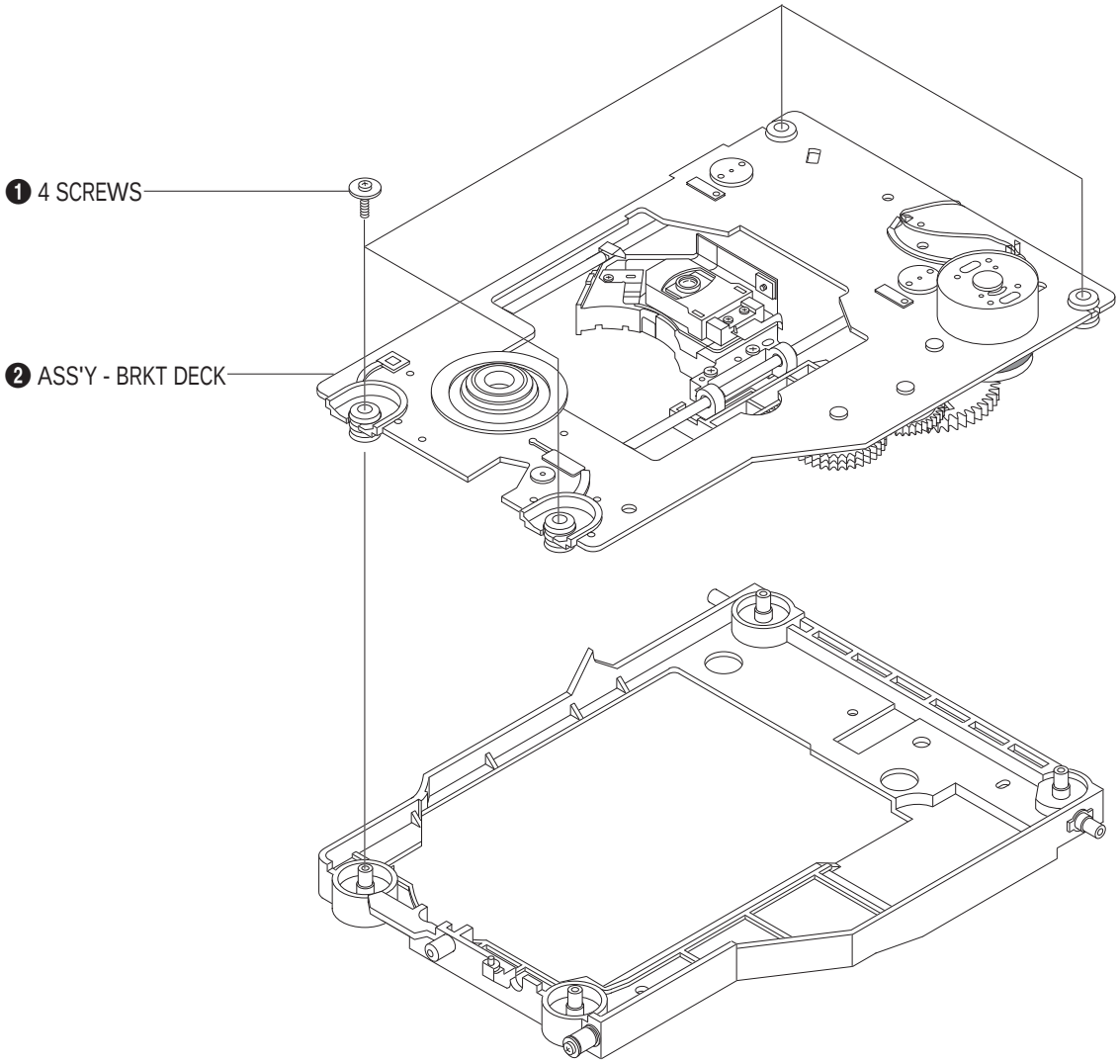


Fig. 5-11 Ass'y-Brkt Deck Removal

5-4-5 Ass'y-Deck Parts Removal

1) Remove 3 Screws ❶ and disassemble 3 Holder-Cams ❷.
2) Disassemble the Rack-Slide ❺ and Ass'y-Pickup ❻, 2 Screws ❹ while simultaneously removing the Shaft-P/U ❸.
3) Remove 3 Screws ❼ and disassemble the Ass'y-Motor Spindle ❽.
4) Remove the Washer-Plain ❾ and disassemble the Ass'y-Gear Feed AU/AL ❿.
5) Remove the Washer-Plain ⓫ and disassemble the Gear-Feed B ⓬.
6) Remove the Washer-Plain ⓭ and disassemble the Ass'y-Gear Feed CU/CL ⓮.

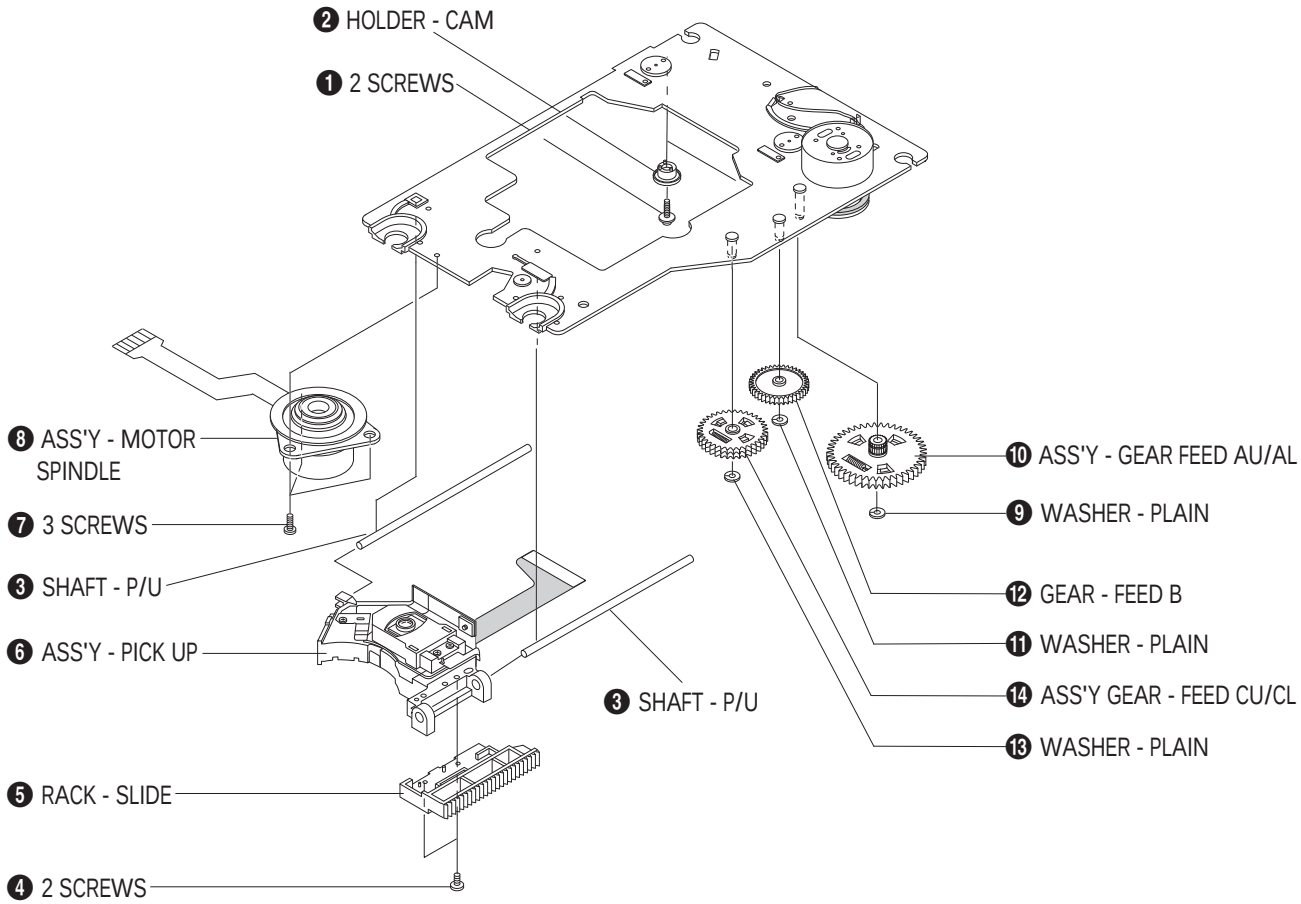

❷ HOLDER - CAM
❶ 2 SCREWS
❽ ASS'Y - MOTOR SPINDLE
❼ 3 SCREWS
❸ SHAFT - P/U
❻ ASS'Y - PICK UP
❺ RACK - SLIDE
❹ 2 SCREWS
❸ SHAFT - P/U
❿ ASS'Y - GEAR FEED AU/AL
❾ WASHER - PLAIN
⓬ GEAR - FEED B
⓫ WASHER - PLAIN
⓮ ASS'Y GEAR - FEED CU/CL
⓭ WASHER - PLAIN

Fig. 5-12 Ass'y- Deck Parts Removal

6. Circuit Descriptions

6-1 S.M.P.S.

6-1-1 Comparsion between Linear Power Supply and S.M.P.S.

6-1-1 (a) Linear

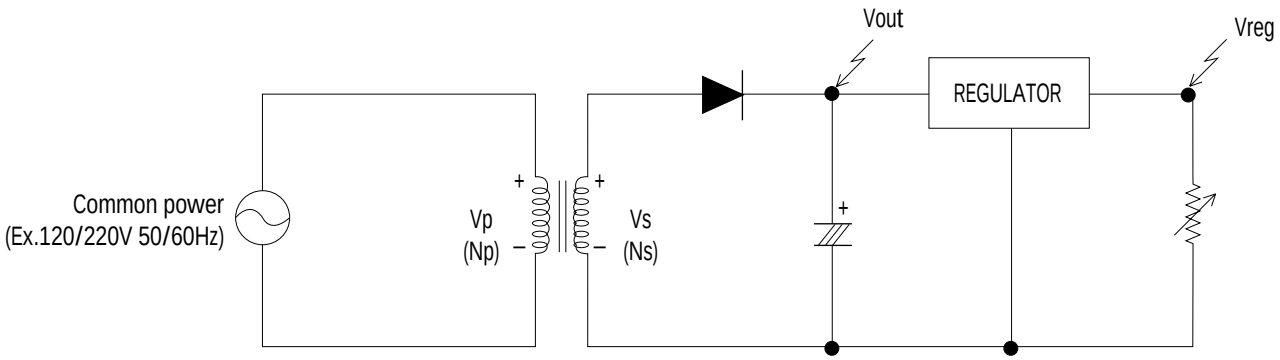


Fig. 6-1 Linear Power Supply

◆ Waveform/Description

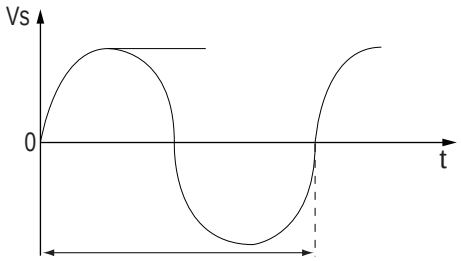


Fig. 6-2

Input : Common power to transformer (Vp).

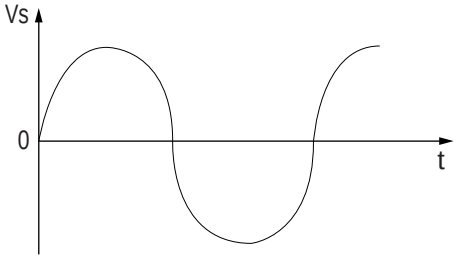


Fig. 6-3

The output Vs of transformer is determined by the ratio of 1st Np and 2nd Ns.
Vs = (Ns/Np) x Vp

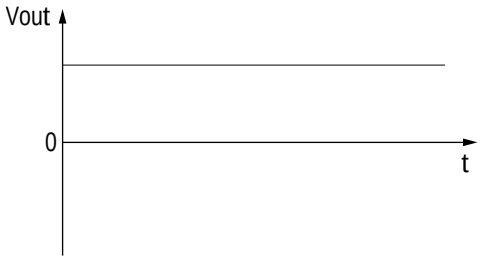


Fig. 6-4

Vout is output (DC) by diode and condensor.

◆ Advantages and disadvantages of linear power supply

1) Advantages : Little noise because the output waveform of transformer is sine wave.

2) Disadvantages :
- ❶ Additional margin is required because Vs is changed (depending on power source). (The regulator loss is caused by margin design).
- ❷ Greater core size and condensor capacity are needed, because the transformer works on a single power frequency.

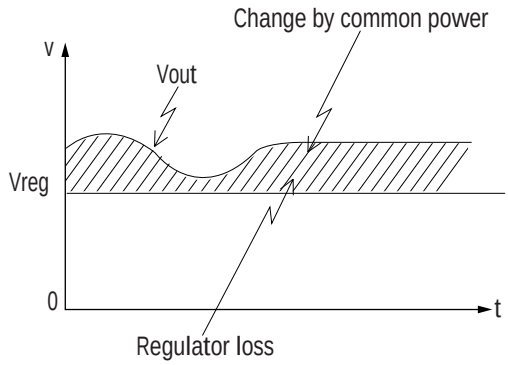


Fig. 6-5

6-1-1 (b) S.M.P.S. (Pulse width modulation method)

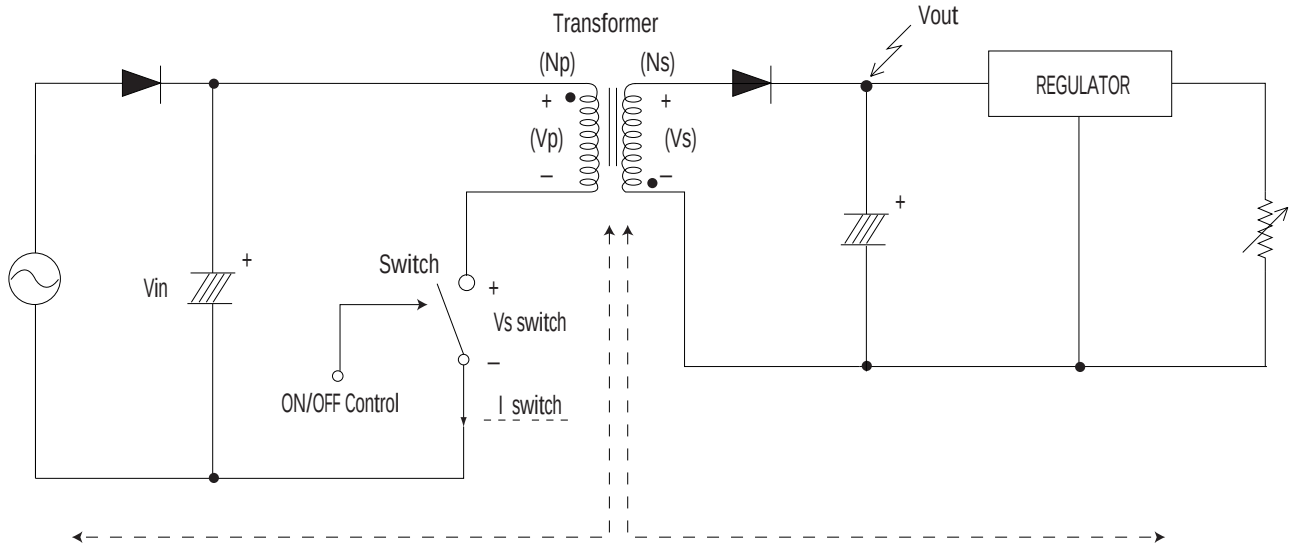


Fig. 6-6

◆ Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton/T) x 100

6-1-2 Circuit description (FLY-Back PWM (Plise Width Modulation) Control)

6-1-2 (a) AC Power Rectification/Smoothing Terminal

1) PD01,PD02,PD03,PD04 : Convert AC power to DC(Wave rectification)
2) PE3 : Smooth the voltage converted to DC(Refer to VIN of Fig. 6-7)
3) PC01, PC02, PC10, PC11, PC12, PC13, PL01, PL02, PL03 : Noise removal at power input/output
4) PVA1 : SMPS protection at power surge input (PVA1 pattern open is to remove noise)
5) PR10 : Rush current limit resistance at the moment of power cord insertion.
   ❶ Rush current = (AC input voltage x 1.414 - Diode drop voltage) / Pattern resistance + PL02,01 resistance + PC10 resistance + PR10) (AC230V based : approx. 26A)
   ❷ Without PR10, the bridge diode might be damaged as the rush current increases.

6-1-2 (b) SNUBBER Circuit : PR15, PR16, PC04, PC05, PD11, PR17

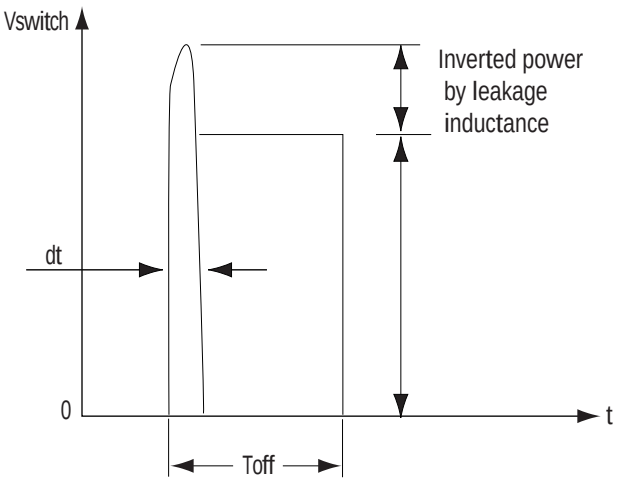


Fig. 6-7

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
   High inverted power occurs at switch (PIC1) off, because of the 1st winding of transformer :
   (V= LI xdi/dt. LI : Leakage Induction)
   A very high residual voltage exists on both terminals of PIC1 because dt is a very short.

2) SNUBBER circuit protects PIC1 from damage through leakage voltage suppression by RC,
   (Charges the leakage voltage to PD11 and PC04, and discharges to PR15 and PR16).

3) PC05, PR17 : For noise removal

6-1-2 (c) PIC1 Vcc circuit

1) PR11, PR12, PR13, PR14 : PIC1 driving resistance (PIC1 works through driving resistance at power cord in)
2) PIC1 Vcc : PR18, PD12, PE6
   ❶ Use the output of transformer as Vcc, because the current starts to flow into transformer while PIC1 is active.
   ❷ Rectify to PD12 and smooth to PE6.
   ❸ Use the output of transformer as PIC1 Vcc : The loads are different before and after PIC1 driving.
   (Vcc of PIC1 decreases below OFF voltage, using only the resistance due to load increase after PIC1 driving.)

6-1-2 (d) Feedback Control Circuit

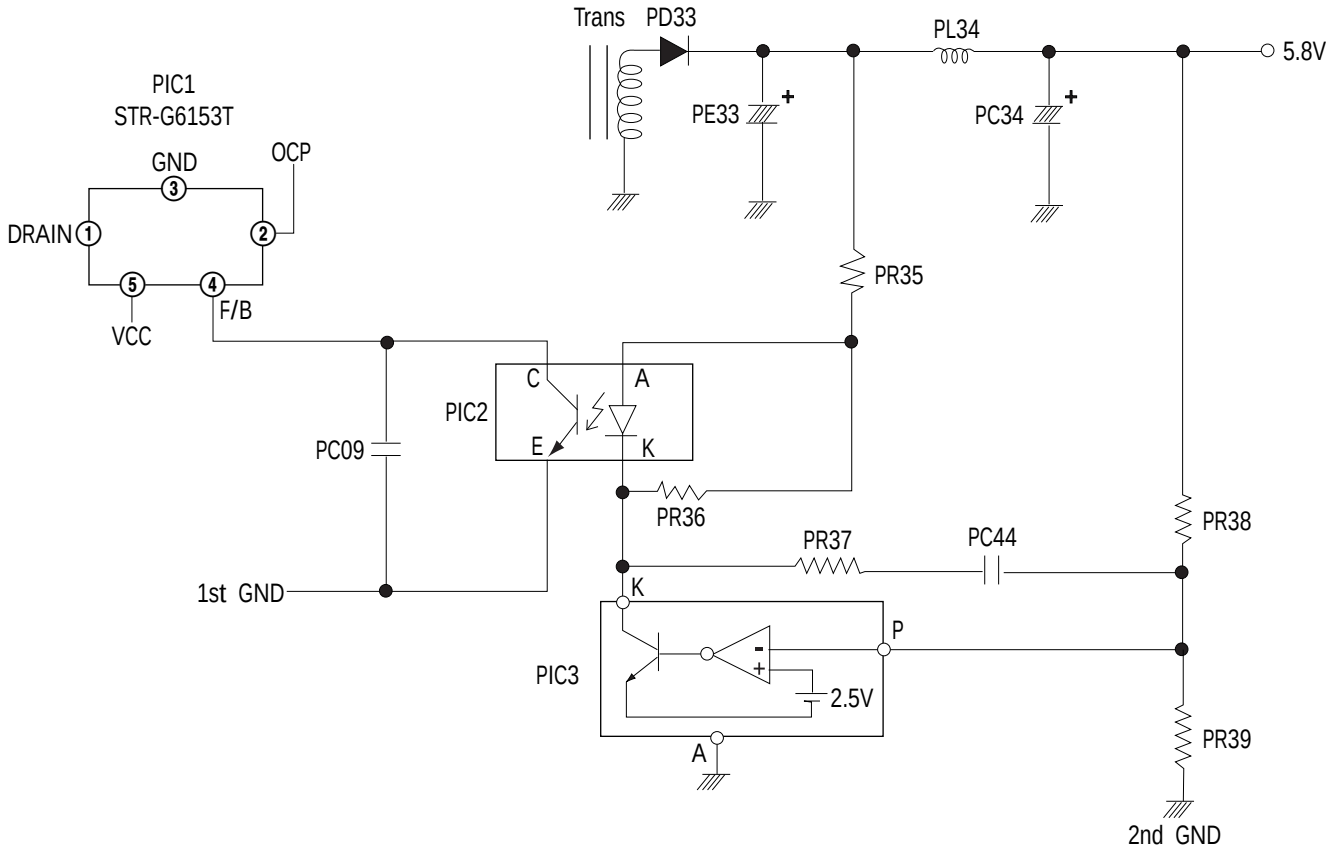


Fig. 6-8

1) F/B terminal of PIC1 determines output duty cycle.
2) C-E(Collector-Emitter) of PIC2 and F/B potential of PIC1 are same.

◆ Operation descriptions

1) Internal OP-Amp '+' base potential of PIC3 is 2.5V and external "-" input potential is connected with PR38 and PR39 to maintain Vout of 5.8V. (Vout = ((PR36 x PR39) / PR39) x 2.5V)
2) If load of 5.8 V terminal increases(or AC input voltage decreases) and Vout decreases below 5.8V, then :
   PIC3 'P' potential down below 2.5V --> PIC3 A-K of base current down --> PIC3 of A-K current down --> PIC2 Diode current down --> PIC2 C-E current down --> PIC2 C-E voltage up --> PIC1 F/B voltage up --> Out Duty up --> Transformer 1st current up --> Transformer 1st power up --> Vout up --> Maintain Vout 5.8V
3) If load of 5.8 V terminal decreases(or AC input voltage rises) and Vout rises above 5.8V, then :
   Reverse sequence of the above description --> Duty down --> Vout down --> Maintain 5.8V (i.e., the feedback to maintains 5.8V).
   ❶ PR35, PR36 : Reduce 5.8V overshoot
   ❷ PR37, PC44 : Prevent PIC3 oscillation(for phase correction)
   ❸ PC09 : Adjust feedback response rate

6-1-3 Internal Block Diagram

6-1-3 (a) Internal Block Diagram of S.M.P.S. Circuit

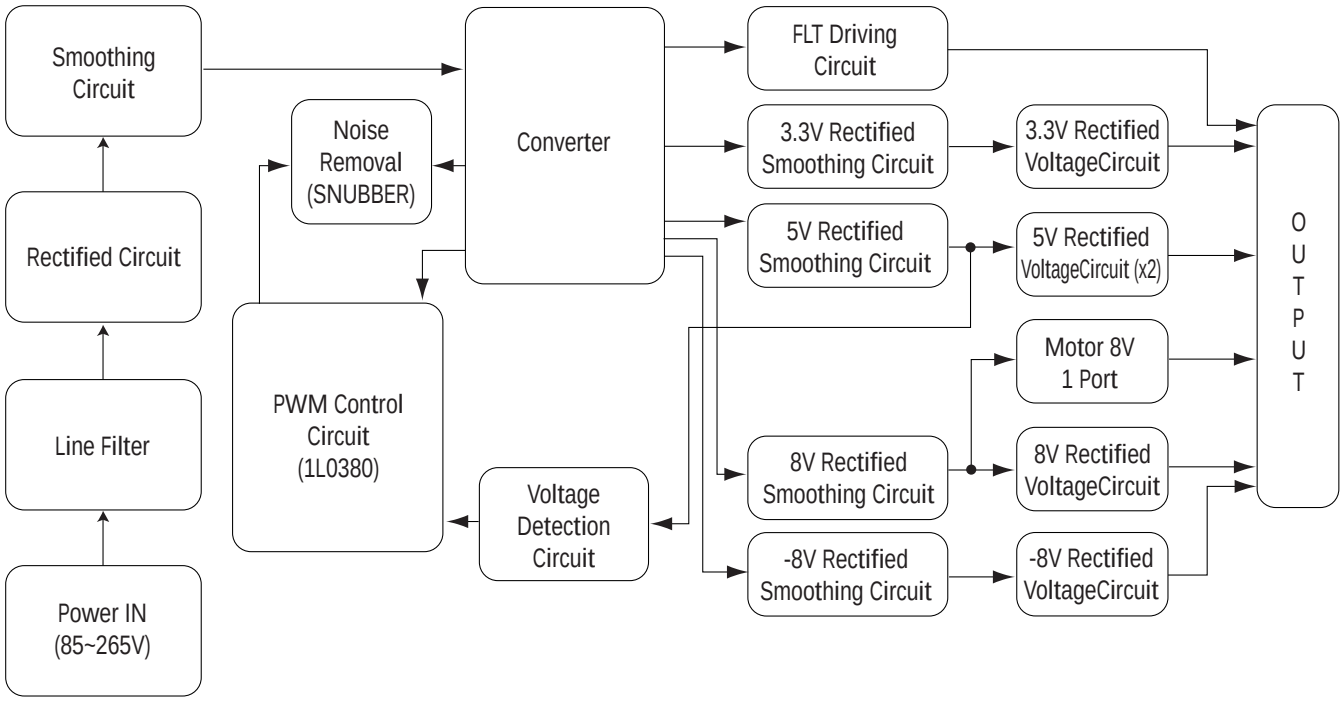


Fig. 6-9

6-1-3 (b) PIC1 (STR-G6153T) Internal Block Diagram

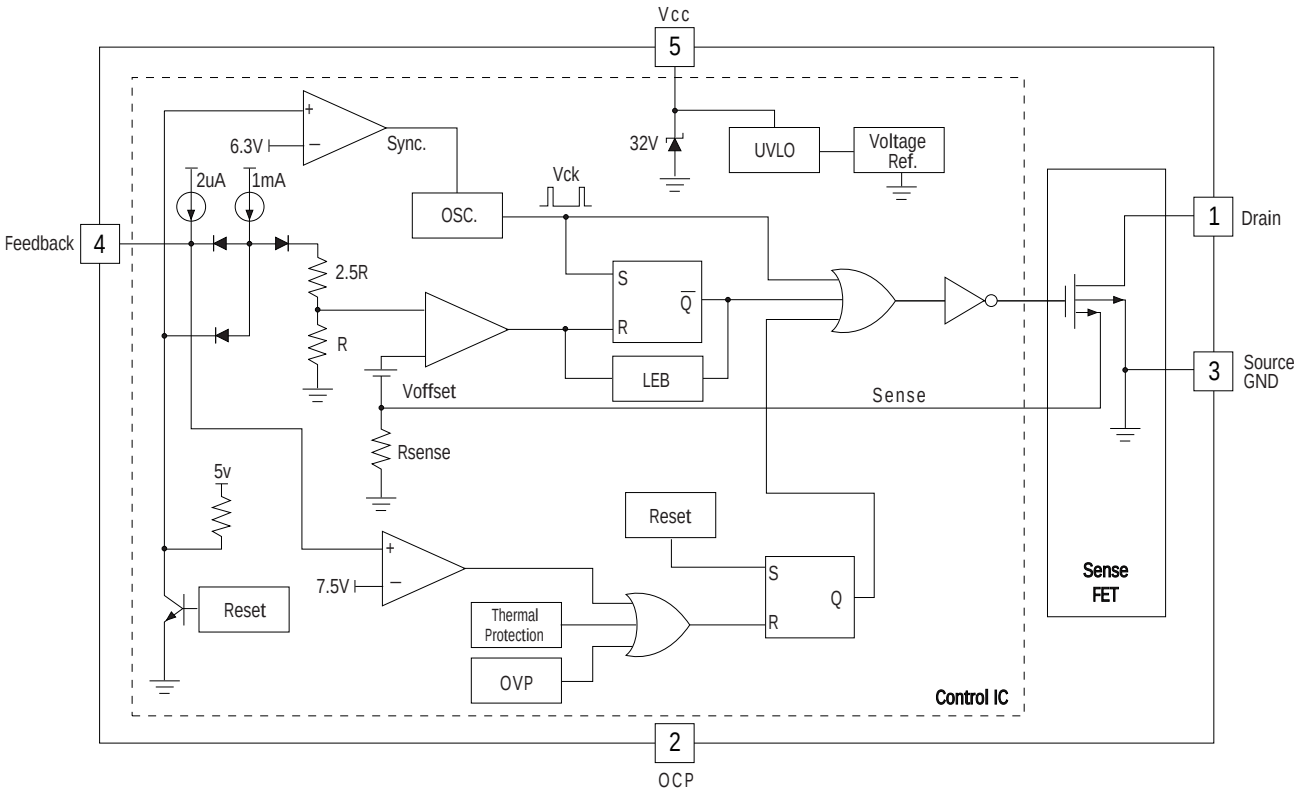


Fig. 6-10

6-2 RF

6-2-1 RIC1 (KS1461)

KS1461 is combined with KS1452 and KS1453 as bipolar IC developed for DVD SERVO system.
Main features include DVD waveform equalizing, CD waveform equalizing, focus error signal generation, 3-beam tracking error signal generation, DPD 1-beam tracking error, defect, envelope, MIRR output, etc. after receiving the pick-up output converted into I/V.

6-2-1 (a) Basic Potentiometer

KS1461 uses a single power method and each circuit is based on V of 2.5V.
V (Pin 12, 20, 24, 67) terminal is needed for IC, which uses the peripheral V.

6-2-1(b) RF signal

Fig. 6-11 shows the flow of signal generated by the pick-up.
A, B, C, D signals detected from pick-up are converted in to RF signal(A+B+C+D) via RF summing AMP.

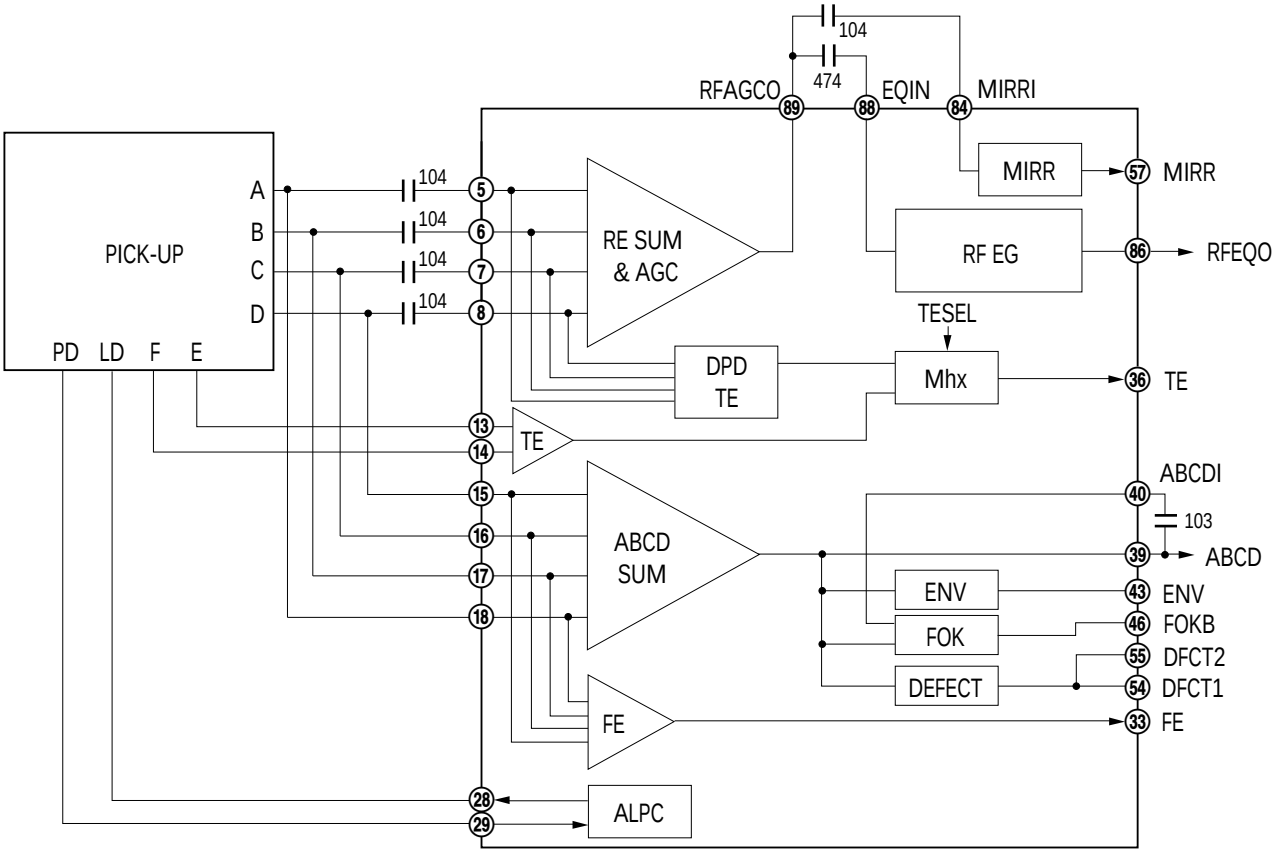


Fig. 6-11

Fig. 6-12 shows the waveform-equalizing block diagram for the RF signal.
It outputs to EQout (Pin 86) terminal by initially changing switching AMP gain of DVD and CD, and then adjusting the level in RF SUM & AGC. It controls RF SUM & AGC gain by means of Pin 89-95 and interfaces with PWM signal, (output from PWM terminal of KS1453, via low-pass filter to adjust boost gain and peak frequency.
EQout terminal is connected with EQin (Pin 86).

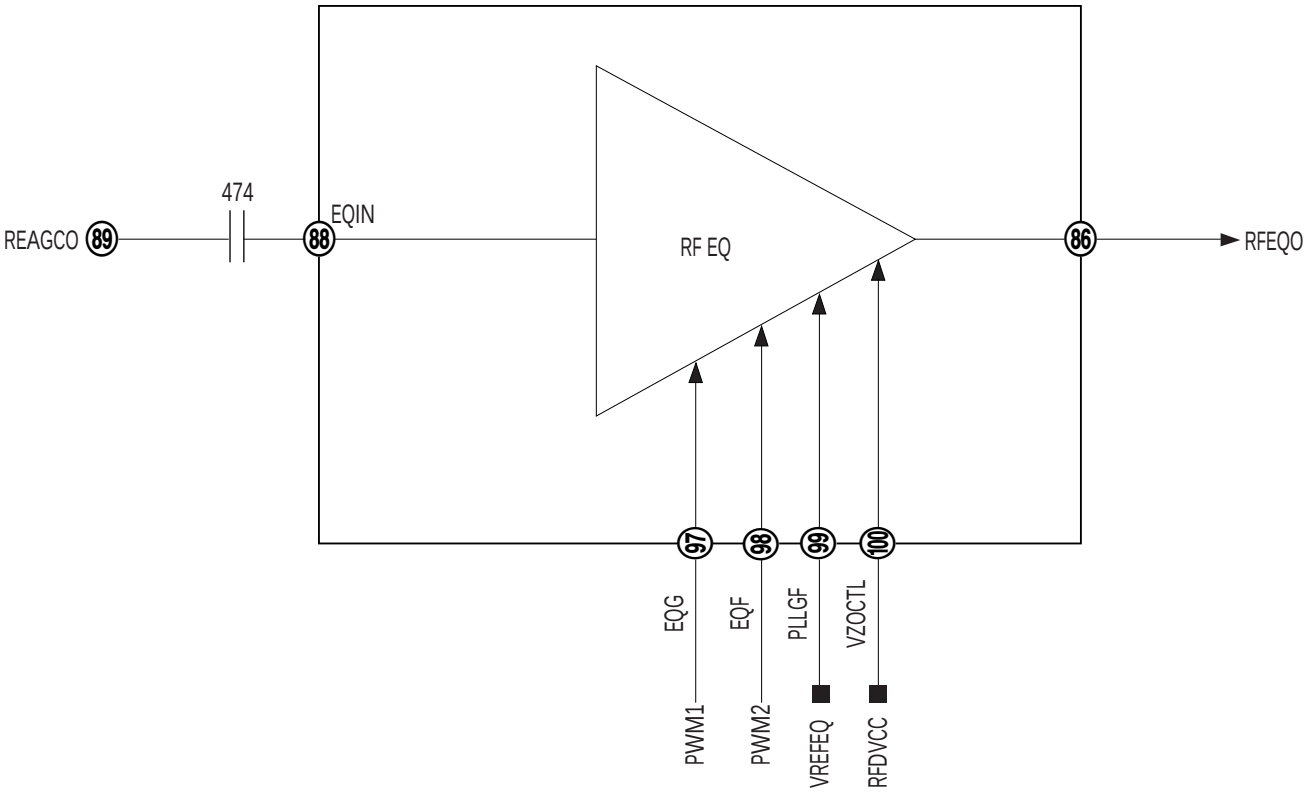


Fig. 6-12

The control parameters of DVD EQ and CD EQ are as follows.

1) DVD CD EQ control parameter

❶ EQG (Pin 97) : Changes the gain of peak frequency with EQ frequency characteristic. Convert PWM signal, output from KS1453, into DC via low-pass filter.

❷ EQF (Pin 98) : Changes the peak frequency with EQ frequency characteristic. Convert PWM signal, output from KS1453, into DVD via low-pass filter.

6-3 System Control

6-3-1 Outline

The main micom peripheral circuit is composed of 16bit Micom (MIC1 ; TMP93CM41F), 8M EPROM (MIC8 ; AM27-C080) for Microcode and data save, 512 byte EE-PROM (MIC5 ; KS24C020) for permanent storage of data needed at power off, MIC4 (74AC573) to latch only address in the bus where address and data are mixed, address decoder (MIC7 ; 74HC00) for selection of ex-ternal device chip and 20MHz clock oscillator for micom operation. The Micom (MIC1 ; TMP93CM41F) mounted in main board analizes the key commands of front panel or instructions of remote control through communication with Micom (FIC1 ; LC86P6232) of front and controls the devices on board to execute the corresponding commands after initializing the devices connected with micom on board at power on.

6-3-2 Block Diagram

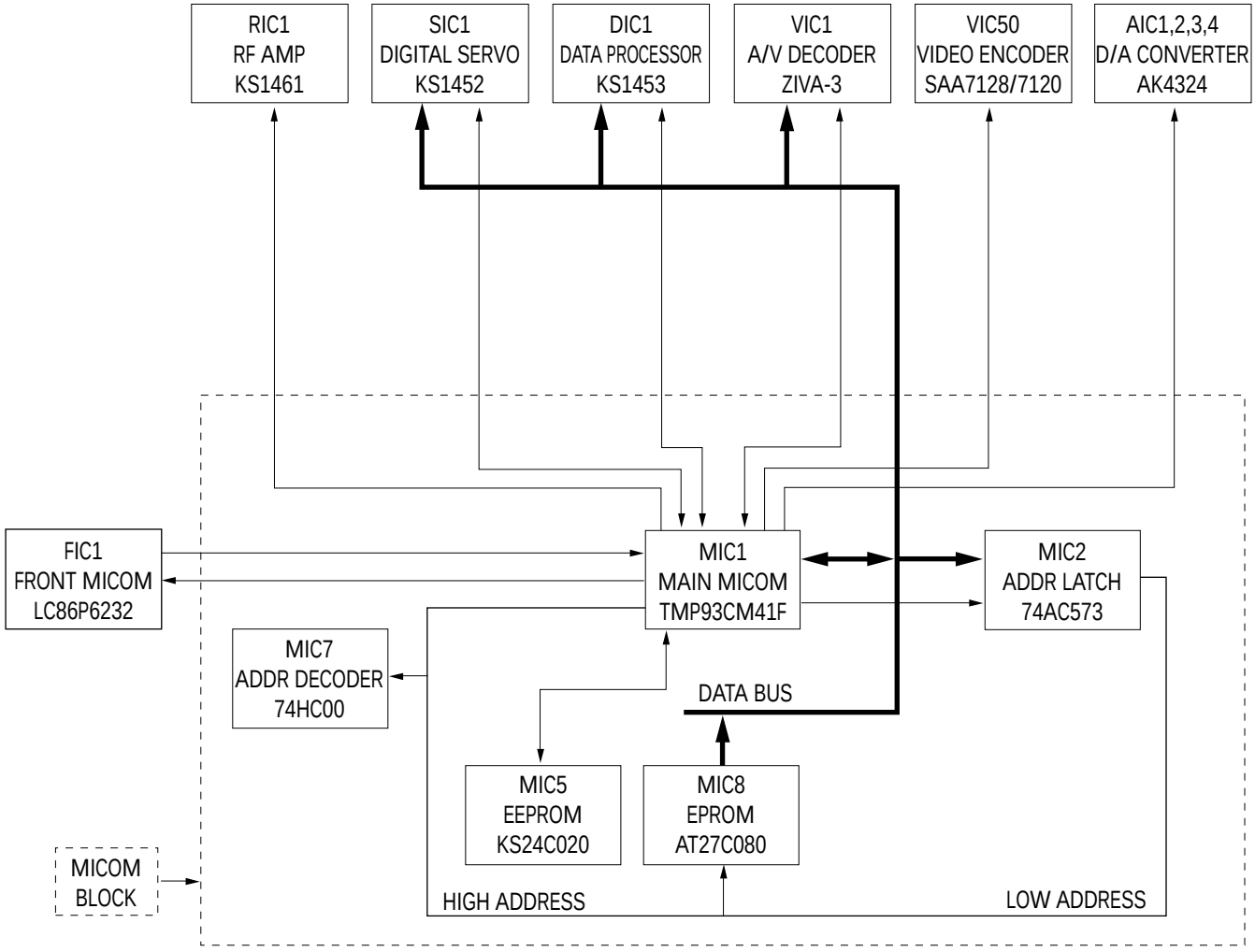


Fig. 6-13

6-3-3 Waveform Description

When micom accesses each device sharing bus, it falls the chip select signal of corresponding chip to (CS2:MIC8-22, /DSPCS:DIC1-2, /DVDCS:VIC1-206/SRVCS:SIC1-10) 0 (Low) before trial.
So to speak, the bus is used by time-division as shown in Fig 6-14, 6-15, 6-16.
Two and more devices can't be accessed simultaneously.

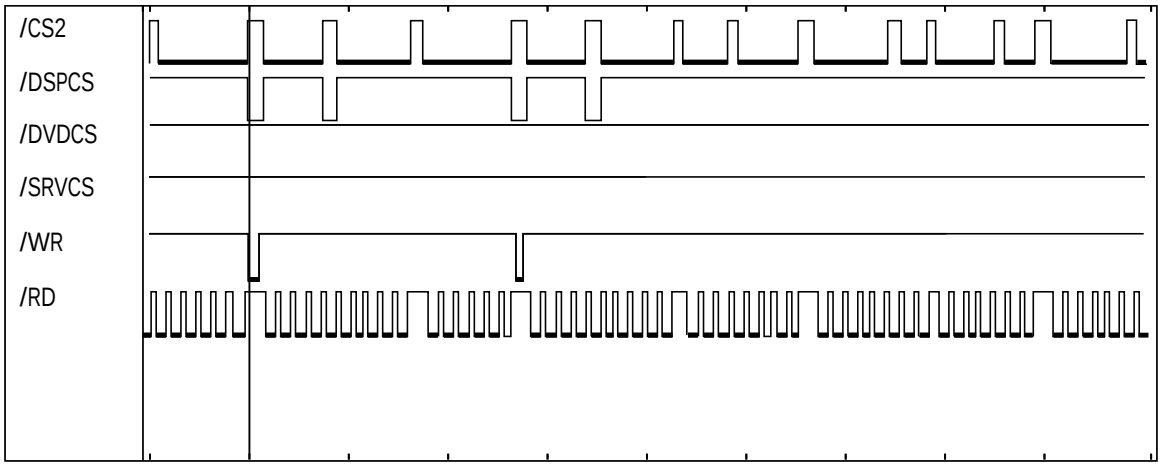


Fig. 6-14

- CH1 : CS2 (MIC8-22, EPROM CHIP SELECT)
- CH2 : DSPCS (DIC1-2, DATA PROCESSOR CHIP SELECT)
- CH3 : DVDCS (VIC1-206, A/V DECODER CHIP SELECT)
- CH4 : SRVCS (SIC1-10, DIGITAL SERVO CHIP SELECT)
- CH5 : WR (MIC1-73, MICOM OUTPUT WRITE SIGNAL)
- CH6 : RD (MIC1-72, MICOM OUTPUT READ SIGNAL)

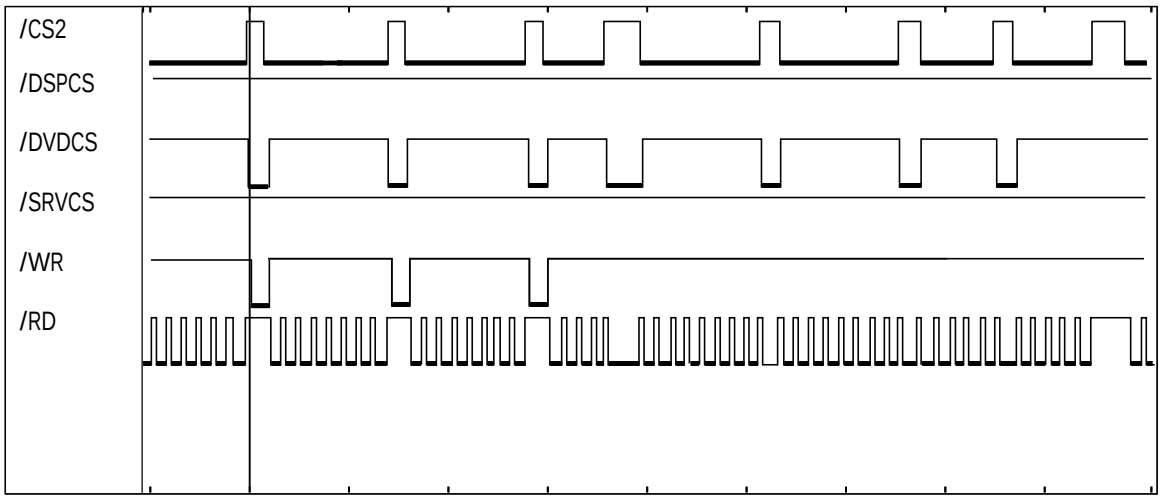


Fig. 6-15

- CH1 : CS2 (MIC8-22, EPROM CHIP SELECT)
- CH2 : DSPCS (DIC1-2, DATA PROCESSOR CHIP SELECT)
- CH3 : DVDCS (VIC1-206, A/V DECODER CHIP SELECT)
- CH4 : SRVCS (SIC1-10, DIGITAL SERVO CHIP SELECT)
- CH5 : WR (MIC1-73, MICOM OUTPUT WRITE SIGNAL)
- CH6 : RD (MIC1-72, MICOM OUTPUT READ SIGNAL)

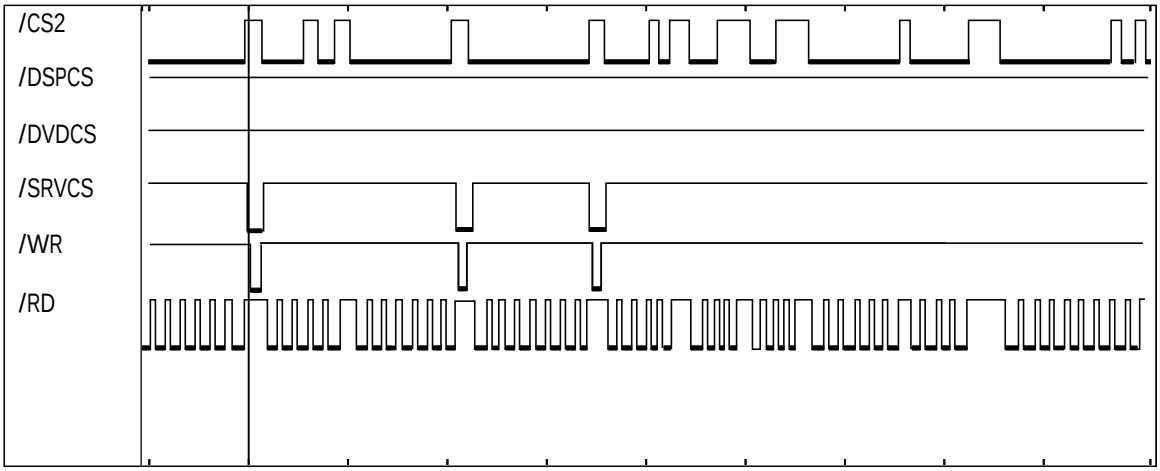


Fig. 6-16

- CH1 : CS2 (MIC8-22, EPROM CHIP SELECT)
- CH2 : DSPCS (DIC1-2, DATA PROCESSOR CHIP SELECT)
- CH3 : DVDCS (VIC1-206, A/V DECODER CHIP SELECT)
- CH4 : SRVCS (SIC1-10, DIGITAL SERVO CHIP SELECT)
- CH5 : WR (MIC1-73, MICOM OUTPUT WRITE SIGNAL)
- CH6 : RD (MIC1-72, MICOM OUTPUT READ SIGNAL)

6-4 Servo

6-4-1 Outline

SERVO system of DVD is divided into Focusing SERVO, Tracking SERVO, SLED Linked SERVO and CLV SERVO (DISC Motor Control SERVO).

1) Focusing SERVO
   Focuses the optical spot output from object lens onto the disc surface. Maintains a uniform distance between object lens of Pick-up and disc (for surface vibration of disc).

2) Tracking SERVO
   Make the object lens follow the disc track in use of tracking error signal (created from Pick-up).

3) SLED Linked SERVO
   When the tracking actuator inclines outwardly as the object lens follows the track during play, the SLED motor moves slightly (and counteracts the incline).

4) CLV SERVO (DISC Motor Control SERVO)
   Controls the disc motor to maintain a constant linear velocity (necessary for RF signal).

6-4-2 Block Diagram

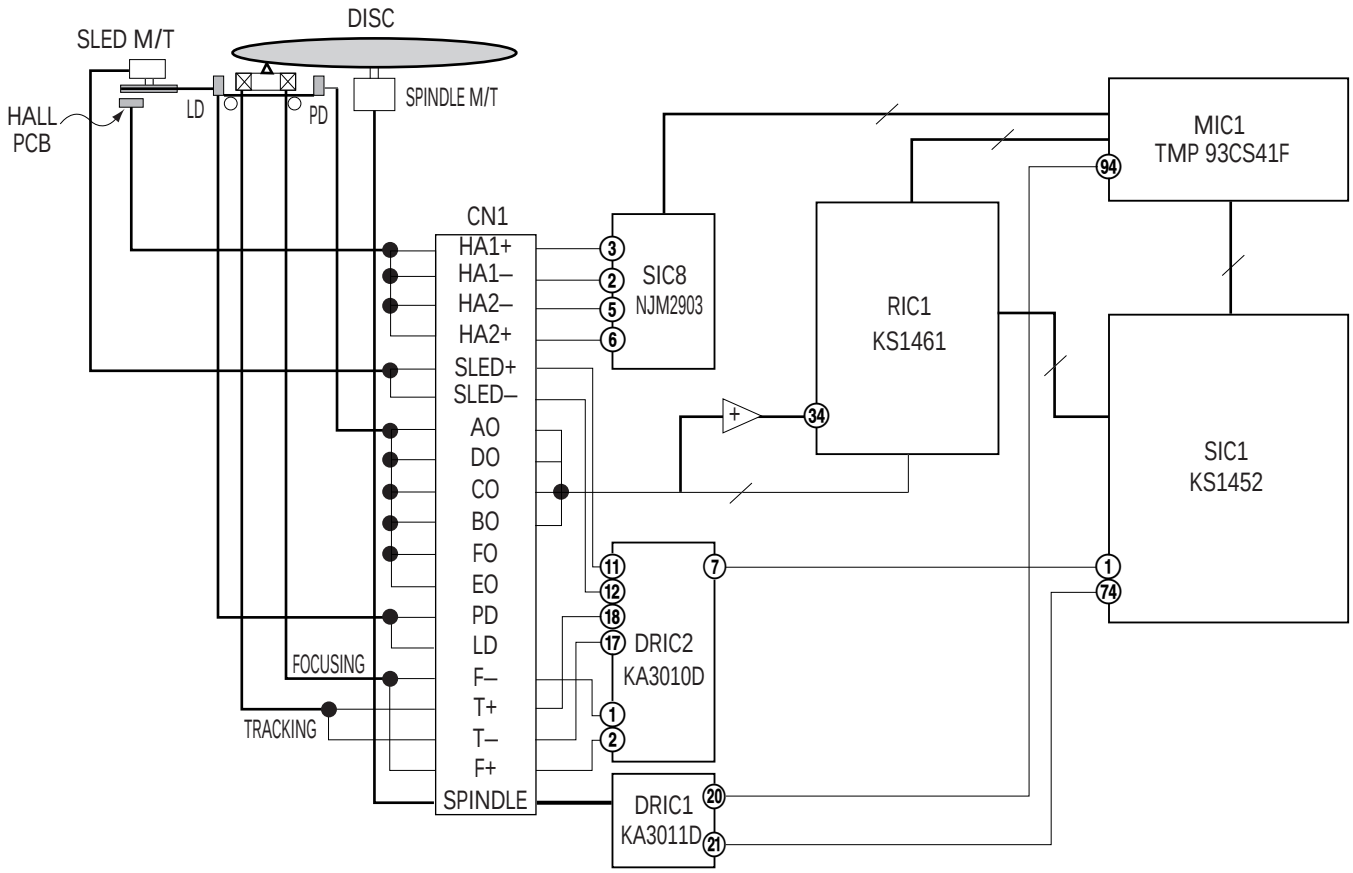


Fig. 6-17

6-4-3 Operation

1) FOCUSING SERVO

(1) FOCUS INPUT

The focus loop is changed from open loop to closed loop, and the triangular waveform moves the object lens up and down (at pin 75 of SIC1 during Focus SERVO ON.) At that time, S curve is input to pin 65 of SIC1.

ABAD (pin 39 of RIC1) signal, summing signal of PD A, B, C, D, is generated, and zero cross(2.5V) point occurs when S curve is focused and ABAD signal exceeds a preset,constant value. The focus loop is changed to closed loop, and the object lens follows the disc movement, maintaining a constant distance from the disc. (these operations are same in CD and DVD).

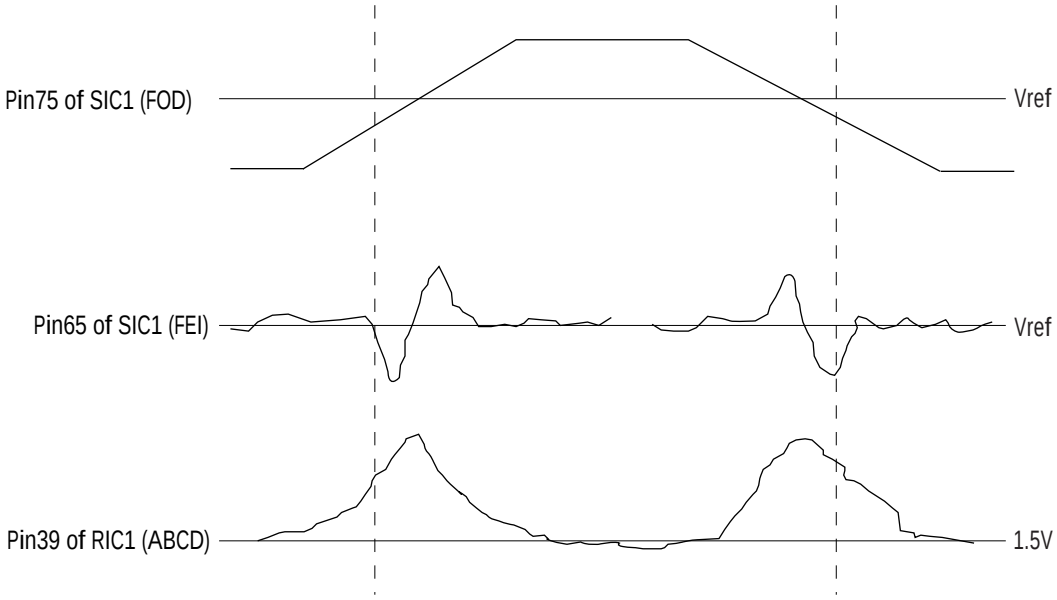


Fig. 6-18

(2) PLAY

When focus loop closes the loop during focus servo on, both pin 65 and pin 75 of SIC1 are controlled by VREF voltage (approx. 2.5V), and pin 1, 2 of DRIC2 are approximately 4.5V.

2) TRACKING SERVO

(1) NORMAL PLAY MODE

❶ For DVD

Composite : The signal output from PD A, B, C, D of Pick-up, the tracking error signal (pin36 of RIC1) uses the phase difference of A+C and B+D in RIC1, and inputs to terminal 64 of SIC1. Then, it is output to SIC1 pin 76 via digital equalizer, and applied to the tracking actuator through DRIC2.

Pins 17, 18 of SIC1 are controlled by VREF(approx. 2.5V) during normal play.

Meanwhile, DVD repeats the track jump from 1 to 4 in inner direction at normal play (because data- read speed from disc is faster than data output speed on screen).

❷ For CD, VCD

Receive the signal output through E, F of Pick-up, from RIC1. The tracking error signal is similar to DVD.

(2) SEARCH Mode :

Search mode : Fine seek,(Moving the tracking actuator slightly little below 255 track) and coarse search, moving much in use of sled motor. The coarse search will be described in sled linked servo and now, the fine seek is explained shortly.
If the object lens is located near target, cut off the tracking loop and give the control signal as many as desired count to move the tracking actuator via SIC1 pin 76 terminal(TRD).

3) SLED LINKED SERVO

- Normal play mode
  Move SLED motor slightly by means of PWM signal in SIC1 pin 73, as the tracking actuator moves along with track during play. Control to move the entire Pick-up as the tracking actuator moves.

- Coarse serach mode
  In case of long-distance search (such as chapter serach), SIC1 uses sled FG (SIC8 pin 1, 7, which is generated) by rotation of sled motor via hall PCB. Then, read ID and compute the existing track count after input of next track. If the existing track count is within fine seek range, tracking begins using fine seek.

4) CLV SERVO(DISC MOTOR CONTROL SERVO)

Input RF signal (from Pick-up) to SIC1 pin59. Detect SYNC signal from RF in SIC1, and output PWM signal to SIC1 pin 55 for constant linear velocity.

6-5 DVD Data Processor

6-5-1 Outline

DIC1(KS1453) performs Sync detection, EFM/EFM demodulation and error correction and Spindle motor control (CLV control) after inputting sliced EFM signal of RF signal at disc playback and EFM read clock (PLCK) signal generated from PLL. Outputs data which converted to the last audio and video from A/V decoder(VIC1). KS1453 uses external memory(4M DRAM) as buffer as well as for error correction and carries out Variable Bit Rate transfer function. VBR function uses the external buffer as buffer to absorb the difference of transfer rate occurring because the transfer rate of disc playback is faster than data transfer rate demanded by A/V decoder(Video/Audio Signal Process Chip).
In case of general disc refresh, the memory is almost filled up periodically. It is because Write rate to memory after disc playback and signal process is faster than Read of A/V decoder. When the memory is filled, this status is reported by interrupt to main micom, which controls the servo to kick back the pick-up to the previous track after memorizing the last data read from disc until now. It takes some times to jump to the previous track and return to the original(jump location) again. The memory will have an empty space because A/V decoder reads out data of memory.
When the memory has an empty space, where data can be processed and written and the pick-up correctly gets to the original location(before kick back location) again, it reads data again avoids the interrupt of data read previously. The basic operation repeats to perform as described above.

6-5-2 Block Diagram

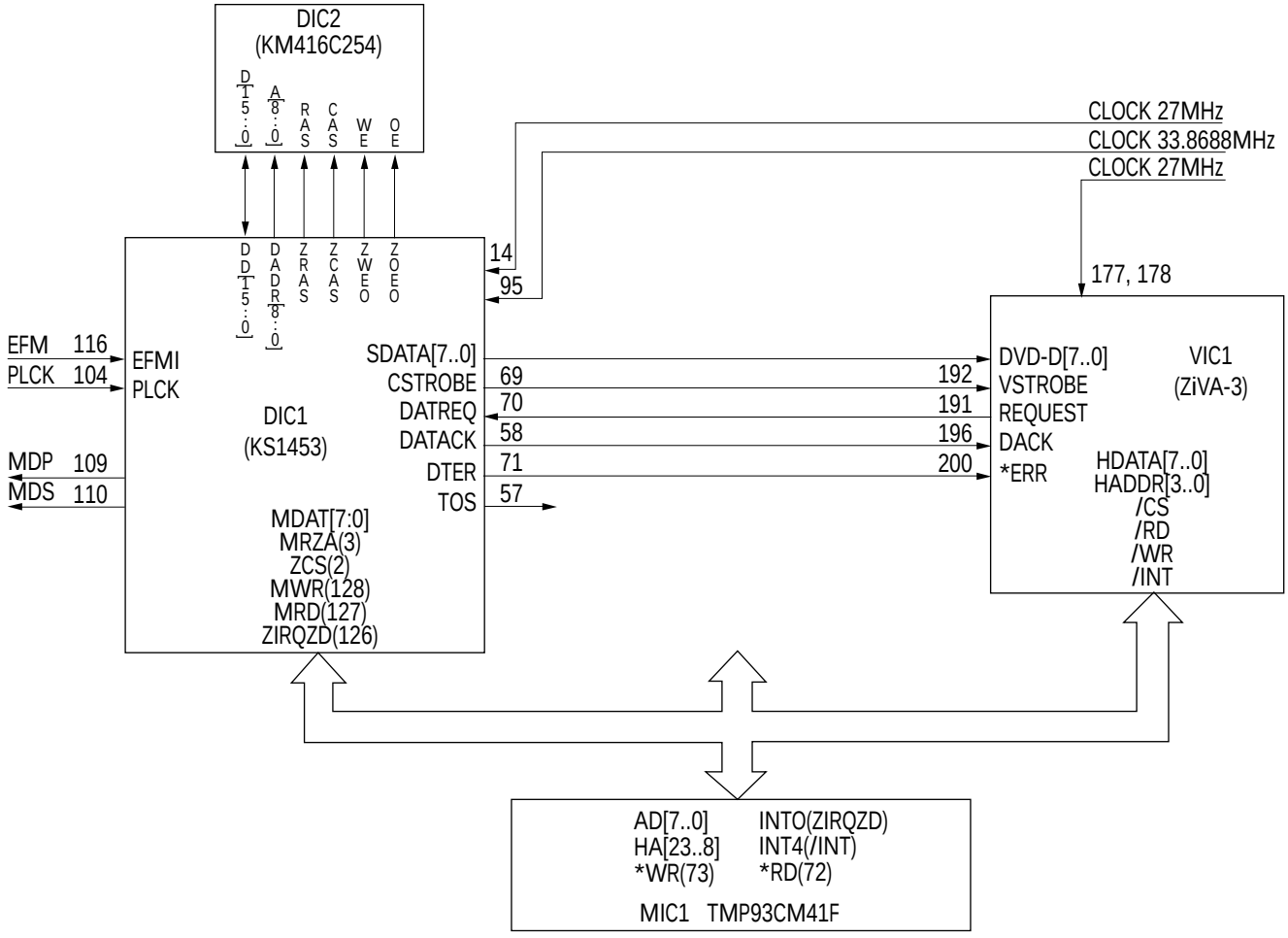


Fig. 6-19

6-5-3 Waveform Description

It measures the timing that data processed in DIC1 at DVD playback.

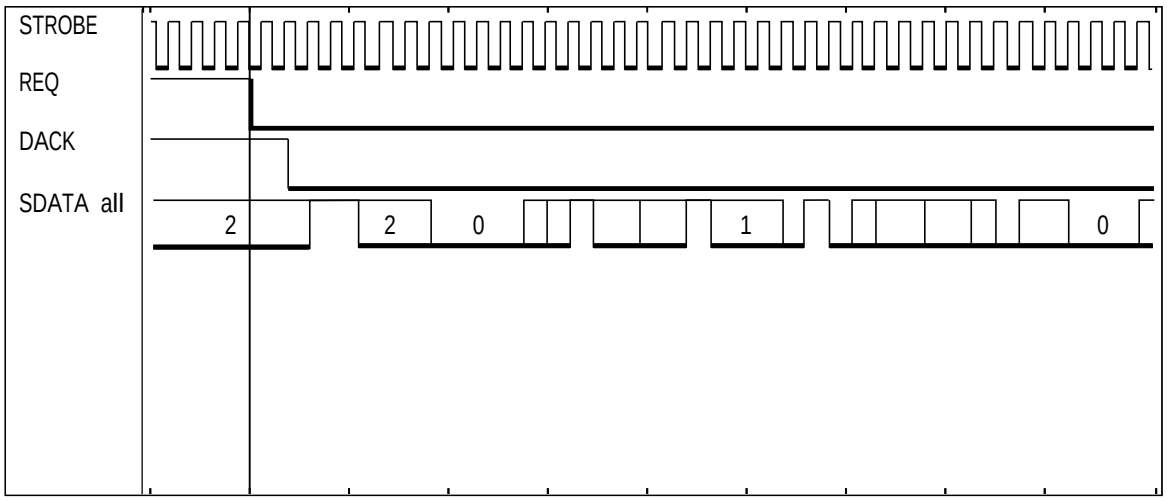


Fig. 6-20

- CH1 : STROBE (DIC1-69, CLOCK)
- CH2 : REQ (DIC1-70, DATA REQUEST)
- CH3 : DACK (DIC1-58, DATA ACKNOWLEDGE)
- CH4 : SDATA (DIC1-60~67, DATA)

6-6 Video

6-6-1 Outline

VIC50 sends VSYNC and HSYNC from VIC1(A/V decoder) and receives 8bit video data.
VIC50 does RGB encoding, copy guard processing and D/A conversion of 8bit video data inputted from VIC1(A/V decoder) by control of MIC1(Micom).
Video signal converted into analog signal is outputted via amplifier of analog part.

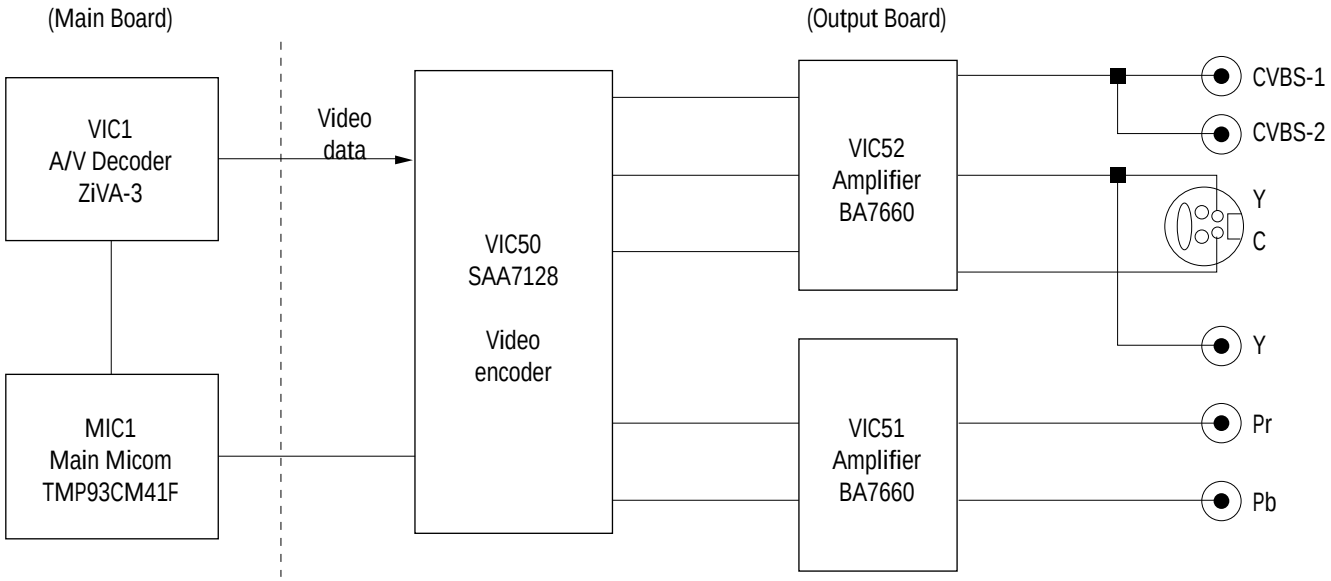


Fig. 6-21 Video Output Block Diagram

6-6-2 NTSC/PAL Digital Encoder (VIC50 : SAA7128)

VIC50 inputted from pin4 with 27MHz generates HSYNC and VSYNC which are based on video signal. Each HSYNC and VSYNC outputted from Pin8 and Pin7 are inputted to Pin157 and Pin158 of A/V decoder VIC1(ZIVA-3). VIC1 is the synchronous signals with the video signal and control the output timing of 8bit video signal of ITU-R601 format. (Pin180, 182, 184 ~ 189 (MSP))
8bit data is inputted to Pin9(MSB) and Pin16 of VIC50 and the inputted data is demuxed with each 8bit of Y/R-Y/B-Y. The separate signal is encoded to NTSC or PAL by control of MIC1. The above signals, that is CVBS (Composite Video Burst Synchronized)(Pin30), S-Video (Y:Pin27, C:Pin24), Y/Pb/Pr(Pin27/Pin29/Pin23) and GB(Pin26/Pin29/Pin23). In course of encoding, 8bit data can extend to 10bit or more. To convert the extended data to quantization noise as possible, VIC50 adopts 10bit D/A converter. VIC50 perform video en-coding as well as copy protection.

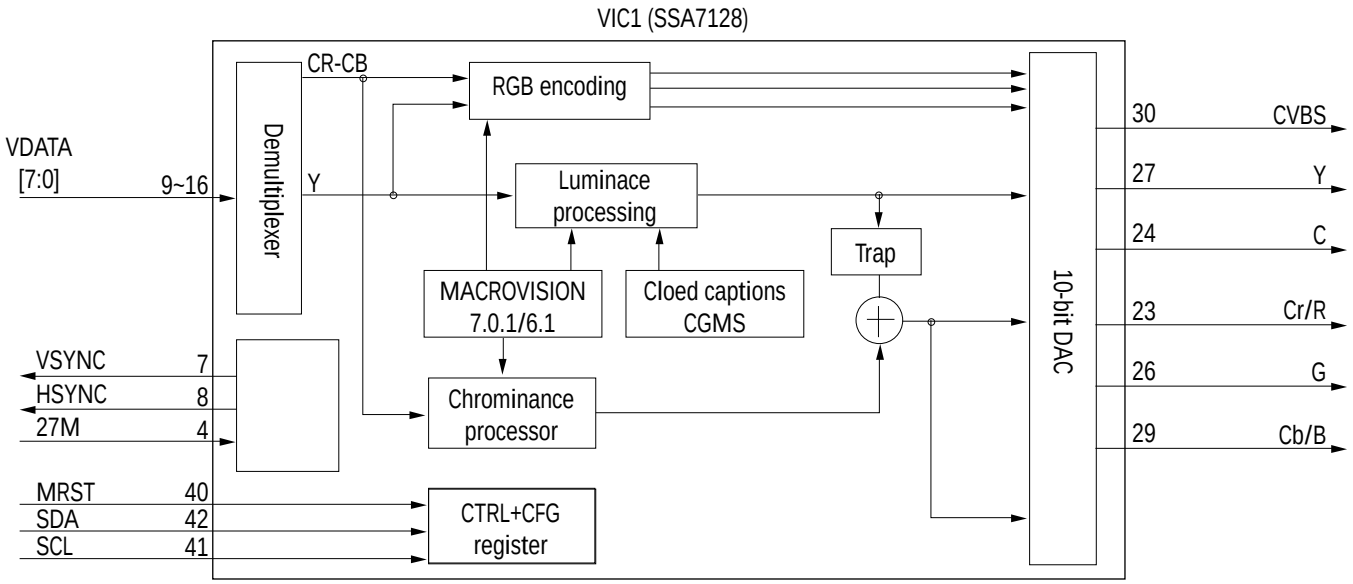


Fig. 6-22

6-6-3 Amplifier (VIC51, VIC52 : BA7660)

VIC51 and VIC52 are 6dB amplifier. Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resistance. Because the level of video encoder output is only 1.1Vpp, the level is adjusted with the special amplifier. When mute of pin1 is high active, if the pin is floating and connected to power, the output signal is never outputted. CVBS, Y, C, Cr and Cb outputted from video encoder are inputted to VIC52 (Pin7, Pin2 and Pin4) and VIC51 (Pin7 and Pin4) respectively and outputted from VIC52 (Pin10, Pin15 and Pin13) and VIC51 (Pin10 and Pin 13). Pin9, Pin12 and Pin14 of VIC51 and VIC52 are feedback pin to SAG compensation(DC characteristic compensation of signal). Resistance(VR3-VR14) which is inserted to input terminal is bias resistance for input offset. The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm.

6-6-4 Scart Jack Output

The AV1 of scart jacks is used for connecting a TV or other display devices and the AV2 for a VCR or other players. When the DVD player is turned on, the RGB, CVBS, or S-VIDEO is outputted to AV1 and CVBS to AV2. When the player is turned off, CVBS signal of the TV is inputted and CVBS or RGB of a VCR inputted via AV2 is outputted. In case of AV2, the reverse signal flow to that.
Switching of power on/off is controlled by SCIC1, SCIC2, and SCIC5.
The control signal (Pin 9,10,11) of SCIC1 and SCIC2 is outputted from PIN100 of FIC1 and connected to the signal(Pin 4) inverted by FIC3.
The control signal(Pin 9,10,11) of SCIC5 is also outputted from Pin100 of FIC1 and inverted again by SCQ8.
According to the characteristics that SCART Jack is supplied same pins for the output of CVBS signal and Y signal and for the R signal and C signal, SCIC3 lets the user select two signals in setup menu.
This control signal (Pin 9,10,11) of the switch is outputted from Pin 92 of FIC1.
The signal selected by switch is amplified by SIC4 and SIC6 and outputted through the SCART jack.
The scart jack has the function select signal (Pin 8 of AV1) that the TV can select automatically RF and the external video signal.
SCQ1 to SCQ7 are the circuit to point, FIC1 (Pin100, 94) controls. When the TV aspect ratio is 4/3 or 16/9, it is outputted 4.5 ~ 7V or 9.5 ~ 12V each. But, when the DVD video source is 16/9 and 16/9 wide is selected in setup menu, 4.5 ~ 7V is outputted. Otherwise, 9.5 ~ 12V is outputted.
When the player is turned off, the TV works with function selection by output signal of VCR in relation of SCQ9 and SCQ10.
RGB control signal (Pin 16 of AV1) is outputted that the TV can select between RGB and CVBS.
SCQ11 ~ SCQ14 and SCQ17 are for RGB control and controlled by FIC1 (Pin91).
When the player is turned off, receives VCR input (Pin 37 of AV2) and buffers in this circuit and then outputs to Pin 16 of AV1.

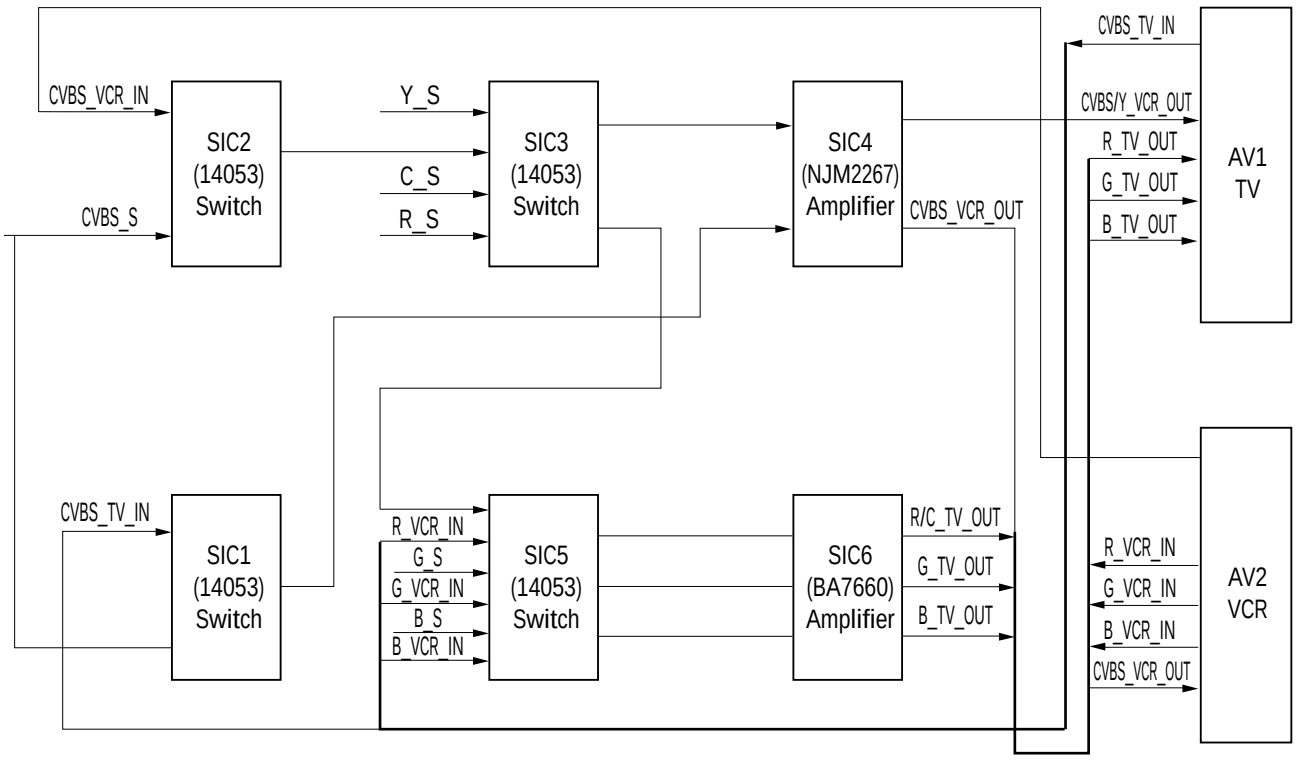


Fig. 6-23

6-7 Audio

6-7-1 Outline

The four data (Data 0~3) outputted from A/V decoder (VIC1 ; ZiVA-3) are supplied to DATA 0 for 2-channel mixed audio output and to DATA 1~3 for Analog audio output (5.1-channel).
The audio data (0~3) transmitted from A/V decoder (VIC1 ; ZiVA-3) are converted into analog signal via audio D/A converter and outputted via post filter and amplifier.
CD and VCD are outputted with only 2 channels audio data and transmit them to Data 0 and Data 1.
Front L/R channel is outputted in mixed audio output (L/R output) and analog audio output and surround L/R, center and subwoofer aren't outputted.
If DVD of 2 channels source disc is used, it is outputted by the same way with CD and VCD.
If 5.1-channel source disc, front L/R channel is outputted in Data 1, Surround L/R in Data 2 and Center/Subwoofer in Data 3. At that time, 5.1 channel can be downmixed in 2 channel in Data 0.

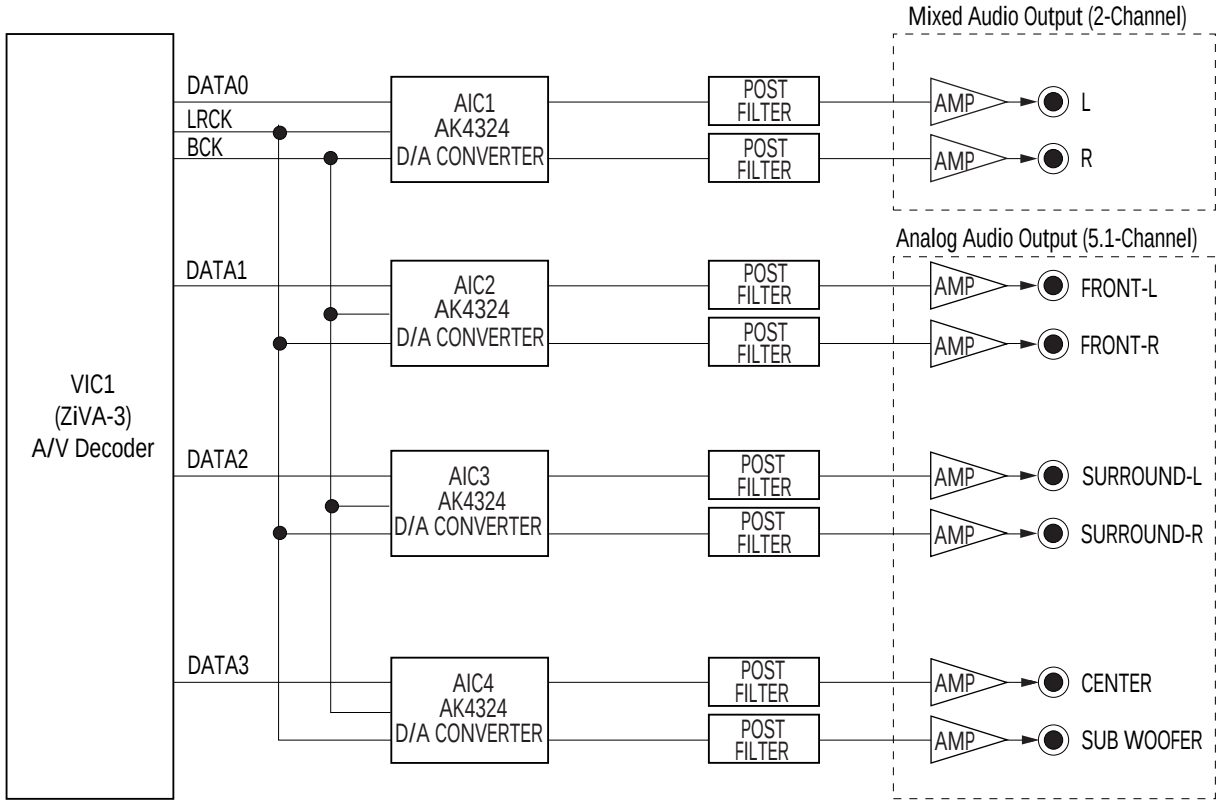


Fig. 6-24 Audio Output Block Diagram

6-7-2 DVD Audio Output

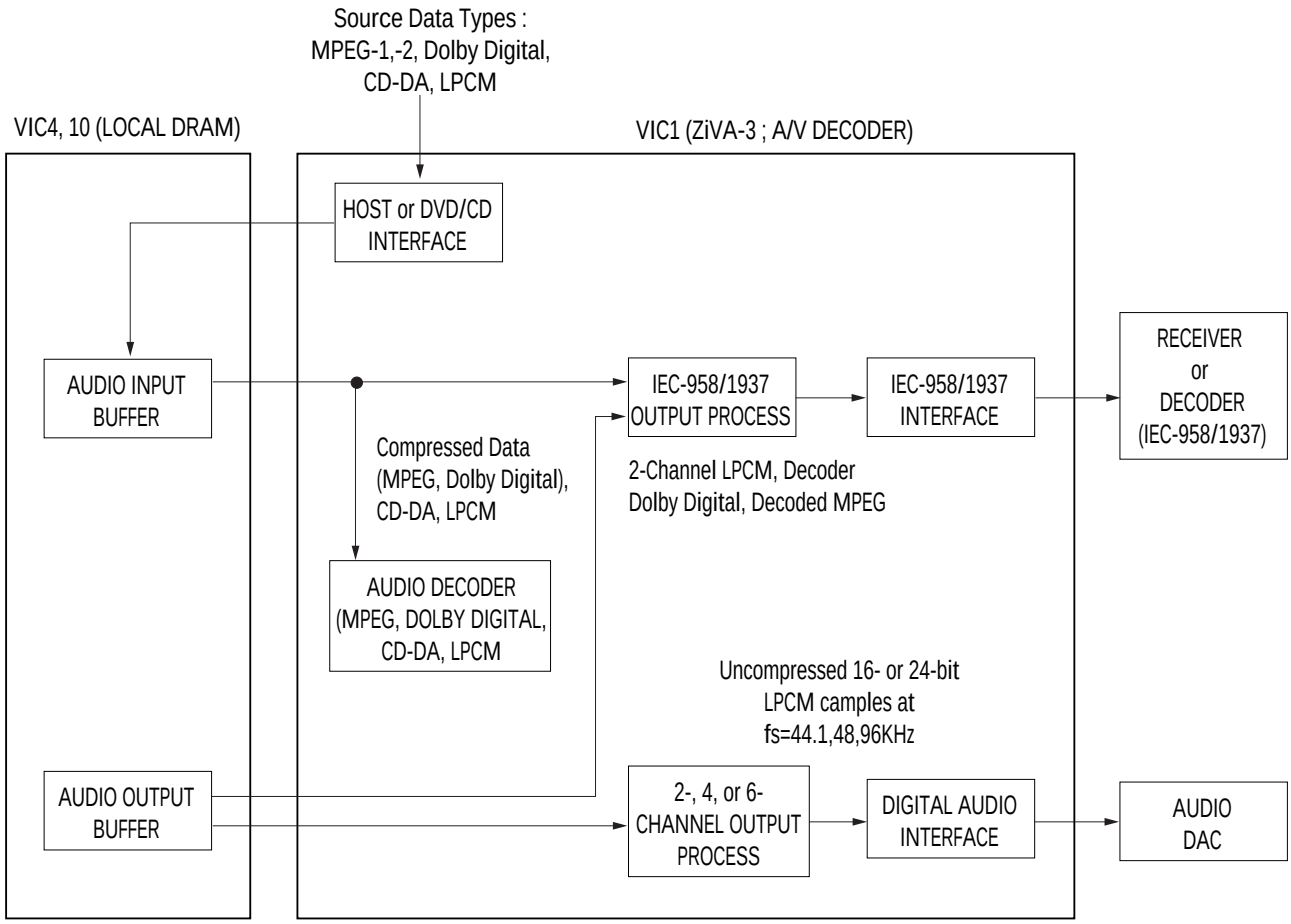


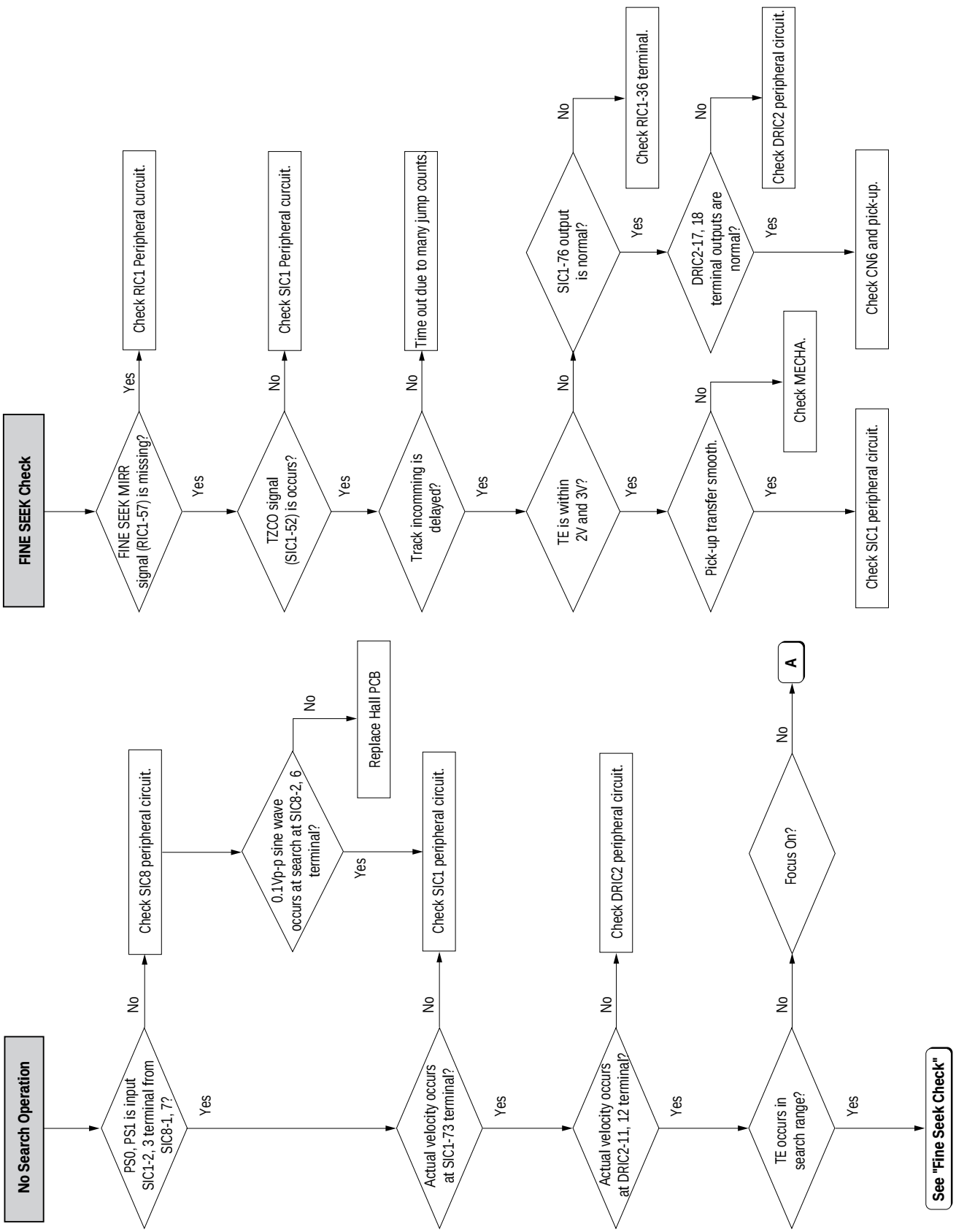
Fig. 6-25 Audio Decoder and Output Interface Datapath

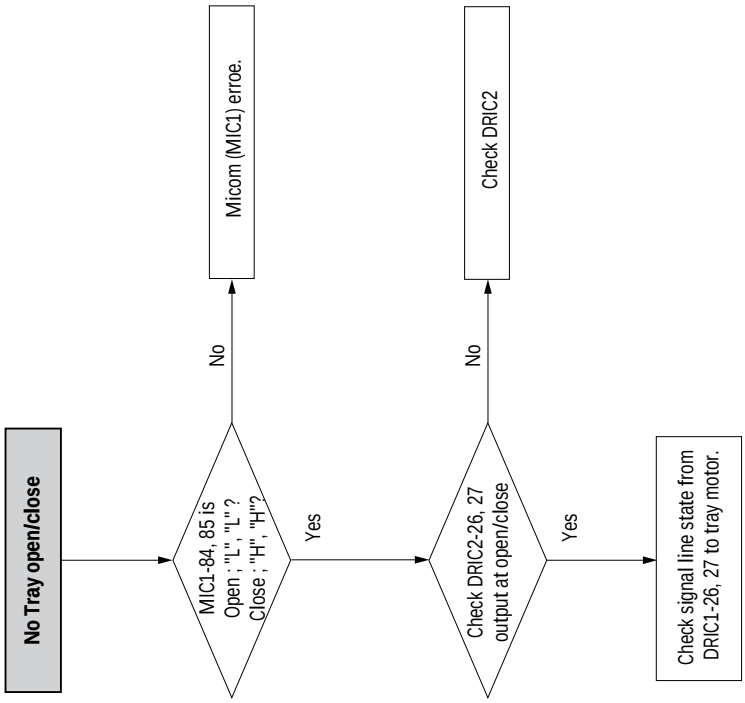
1) Compressed Data

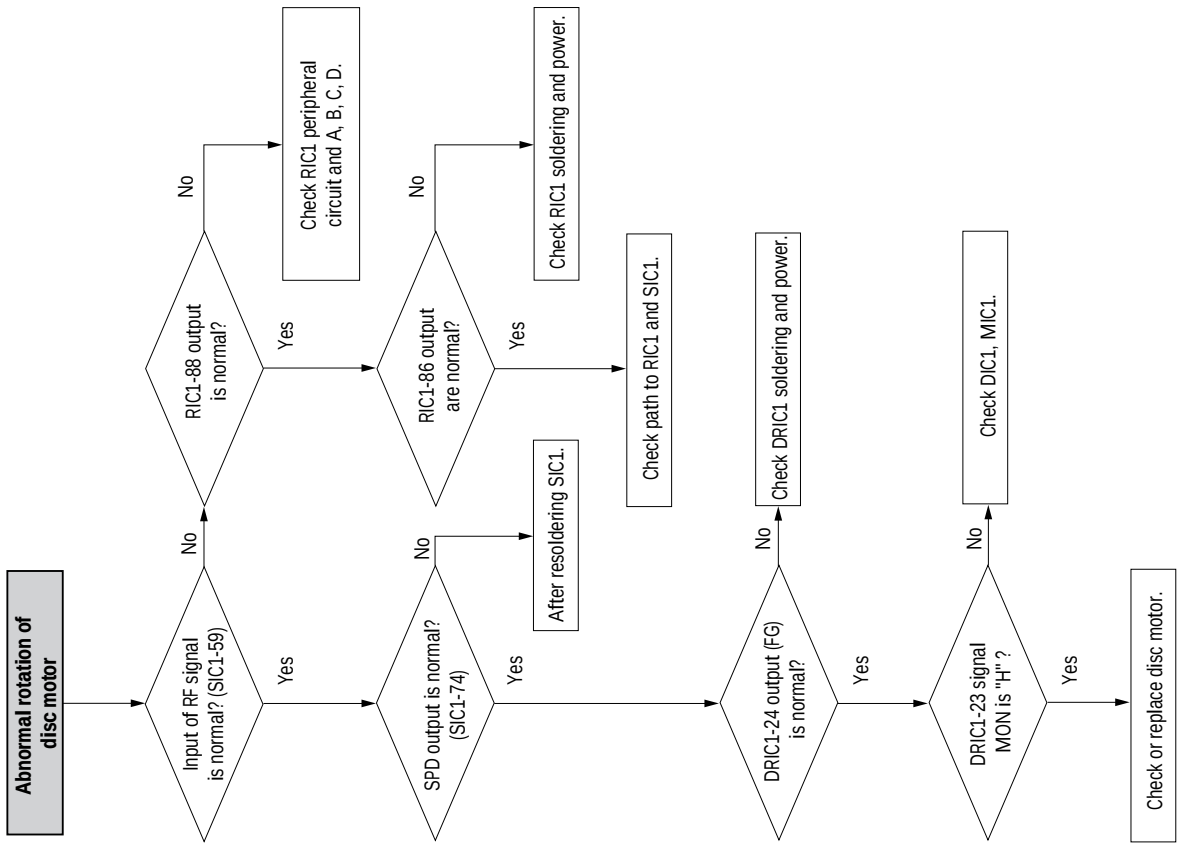
The audio data inputted to VIC1 (ZiVA-3) A/V decoder is divided into compressed data and uncompressed data. It is compressed data that is compressed with multi-channel audio data such as Dolby digital, MPEG, DTS, etc. The compressed data inputted to VIC1 (ZiVA-3) is converted into the uncompressed data of 2, 4, and 6 channels through ZiVA-3 built-in audio decoder and is outputted to Data 0, 1, 2, and 3 through digital audio interface. The compressed data is transmitted to external AC-3 amplifier or MPEG/DTS amplifier as IEC-958/1937 transmission data format compressed by ZiVA-3 built-in IEC-958 output process.

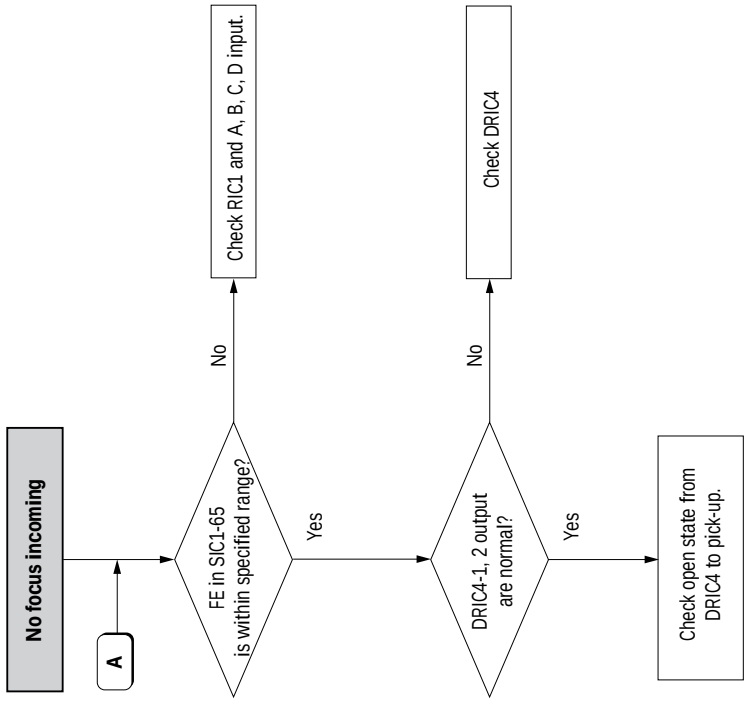
2) Uncompressed Data

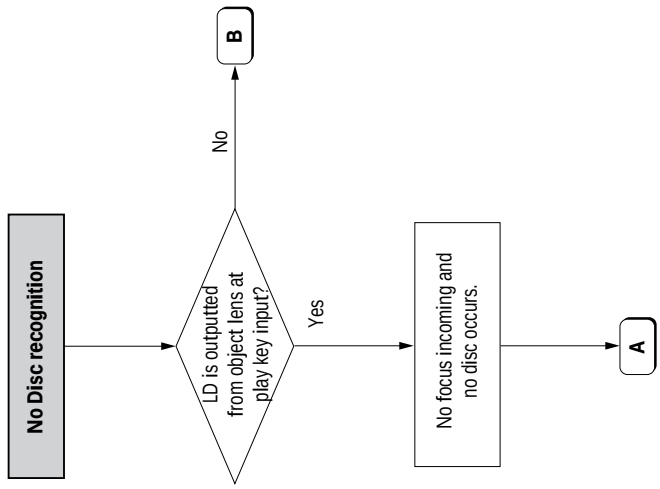
The uncompressed data is that data isn't compressed, so it is called CD-DA, LPCM data.
The 2 channels data is converted through audio decoder 2-channel data and Data 0 and Data 1 are outputted in digital audio interface.Via IEC-958 output process, they is transmitted to digital amplifier or AC-3/MPEG/DTS amplifier built in the external digital input source with IEC-958/1937 transmission format.

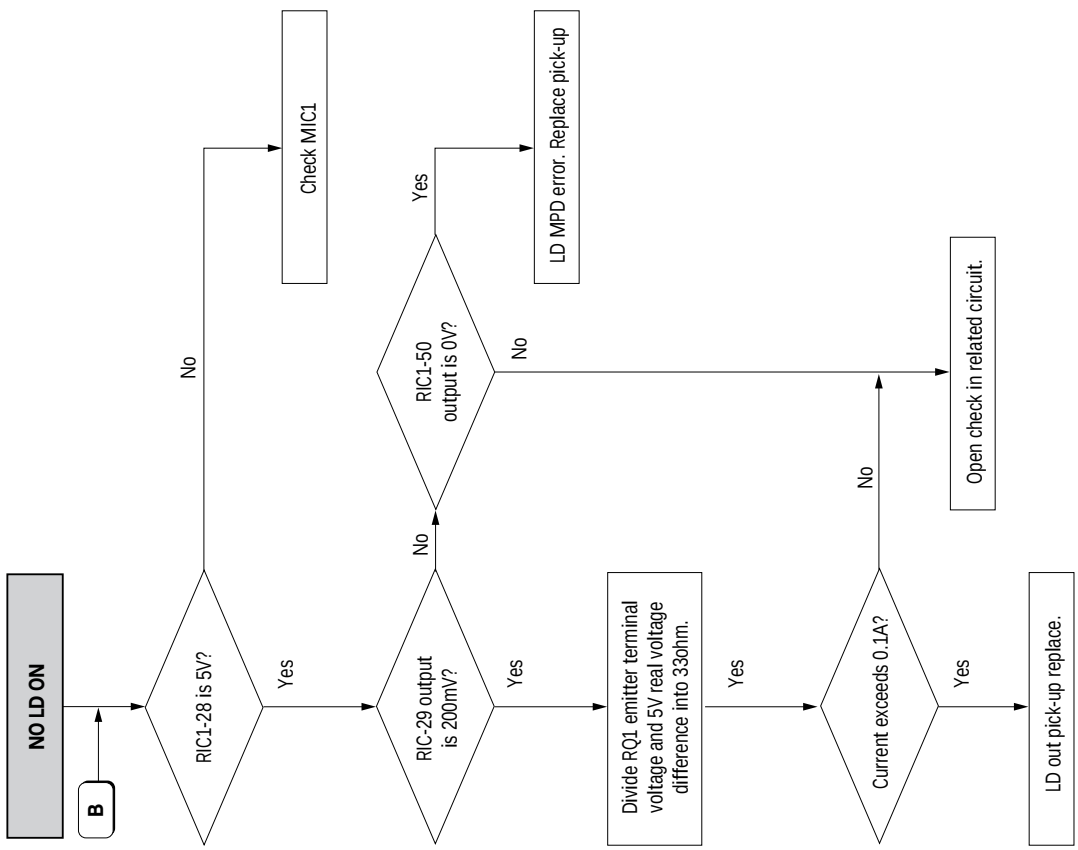

FINE SEEK Check
FINE SEEK MIRR signal (RIC1-57) is missing?
Yes
Check RIC1 Peripheral curcuit.
Yes
TZCO signal (SIC1-52) is occurs?
No
Check SIC1 Peripheral curcuit.
Yes
Track incomming is delayed?
No
Time out due to many jump counts.
Yes
TE is within 2V and 3V?
No
SIC1-76 output is normal?
No
Check RIC1-36 terminal.
Yes
Pick-up transfer smooth.
No
Check MECHA.
Yes
Check SIC1 peripheral circuit.
DRIC2-17, 18 terminal outputs are normal?
No
Check DRIC2 peripheral circuit.
Yes
Check CN6 and pick-up.
No Search Operation
PS0, PS1 is input SIC1-2, 3 terminal from SIC8-1, 7?
No
Check SIC8 peripheral circuit.
0.1Vp-p sine wave occurs at search at SIC8-2, 6 terminal?
No
Replace Hall PCB
Yes
Check SIC1 peripheral circuit.
Yes
Actual velocity occurs at SIC1-73 terminal?
No
Check DRIC2 peripheral circuit.
Yes
Actual velocity occurs at DRIC2-11, 12 terminal?
No
Focus On?
No
A
Yes
TE occurs in search range?
No
See "Fine Seek Check"
Yes

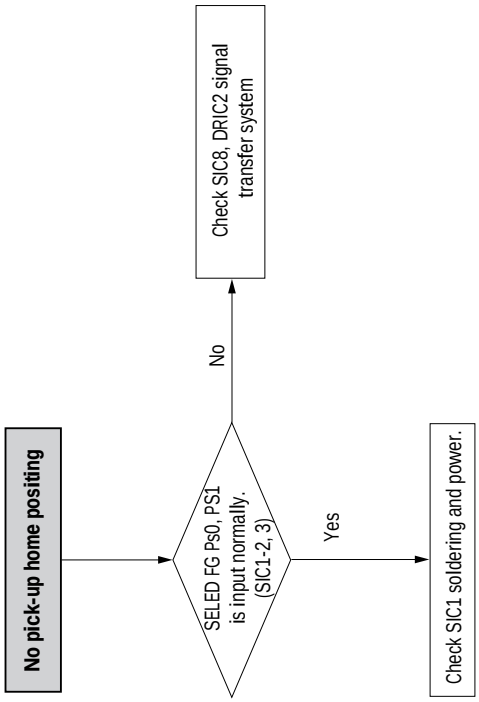

No Tray open/close
MIC1-84, 85 is Open : "L", "L" ? Close : "H", "H"?
No
Micom (MIC1) erroe.
Yes
Check DRIC2-26, 27 output at open/close
No
Check DRIC2
Yes
Check signal line state from DRIC1-26, 27 to tray motor.

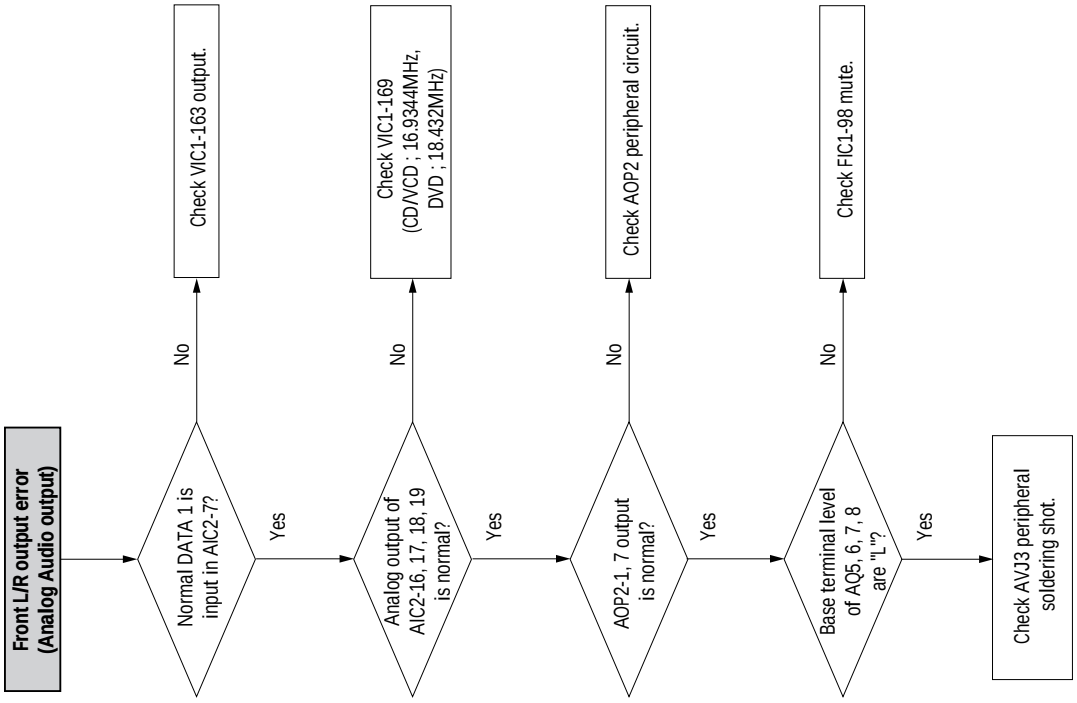

Abnormal rotation of disc motor
Input of RF signal is normal? (SIC1-59)
No
RIC1-88 output is normal?
No
Check RIC1 peripheral circuit and A, B, C, D.
Yes
RIC1-86 output are normal?
No
Check RIC1 soldering and power.
Yes
Check path to RIC1 and SIC1.
Yes
SPD output is normal? (SIC1-74)
No
After resoldering SIC1.
Yes
DRIC1-24 output (FG) is normal?
No
Check DRIC1 soldering and power.
Yes
DRIC1-23 signal MON is "H" ?
No
Check DIC1, MIC1.
Yes
Check or replace disc motor.

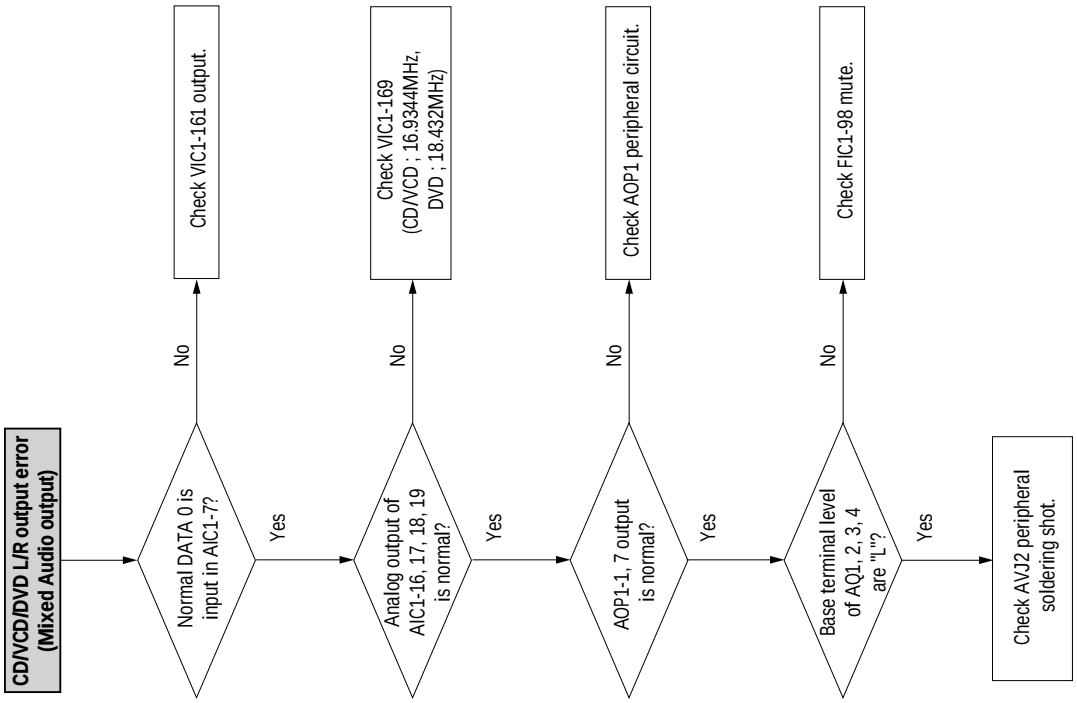

No focus incoming
A
FE in SIC1-65 is within specified range?
No
Check RIC1 and A, B, C, D input.
Yes
DRIC4-1, 2 output are normal?
No
Check DRIC4
Yes
Check open state from DRIC4 to pick-up.

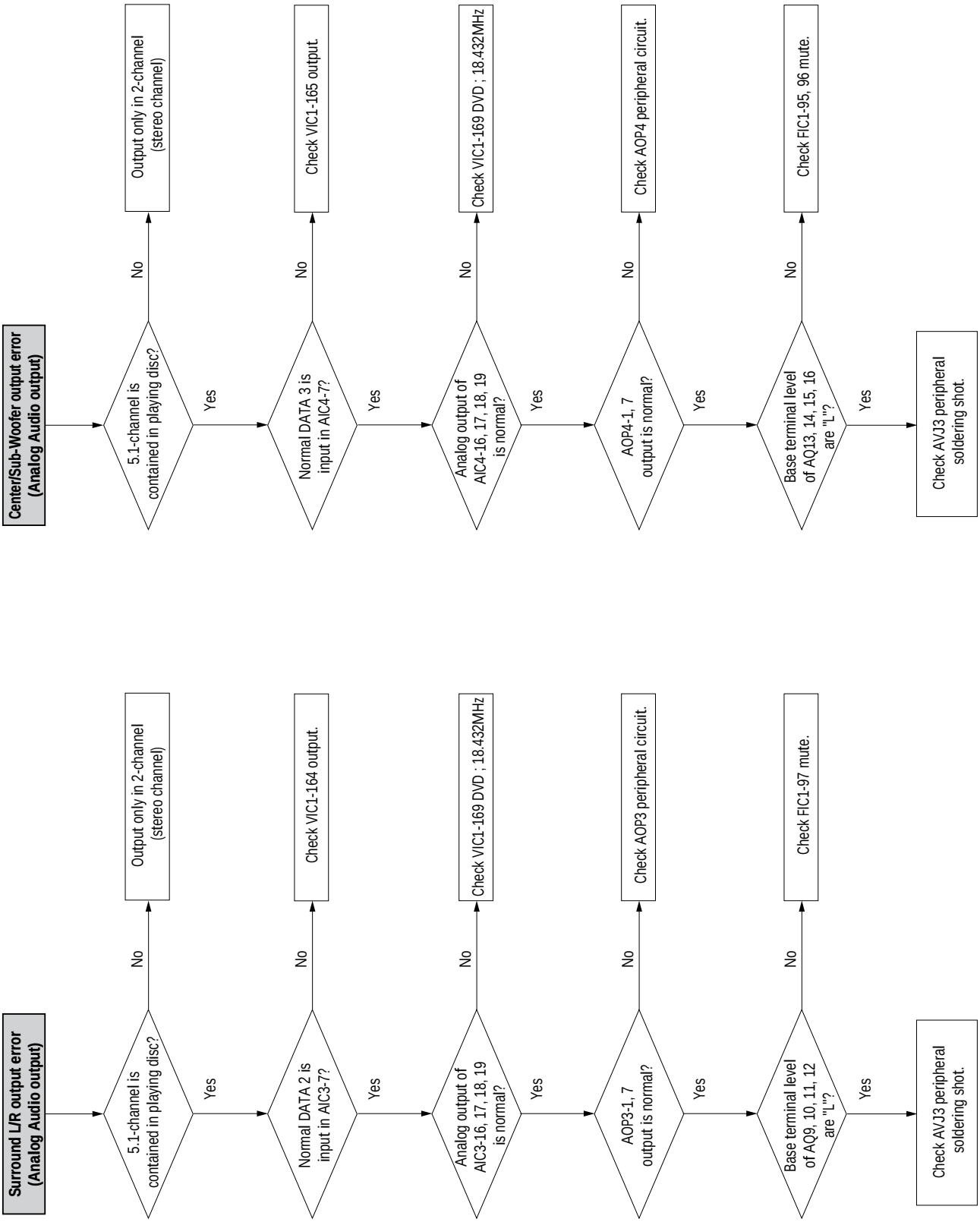

No Disc recognition
LD is outputted from object lens at play key input?
No
B
Yes
No focus incoming and no disc occurs.
A

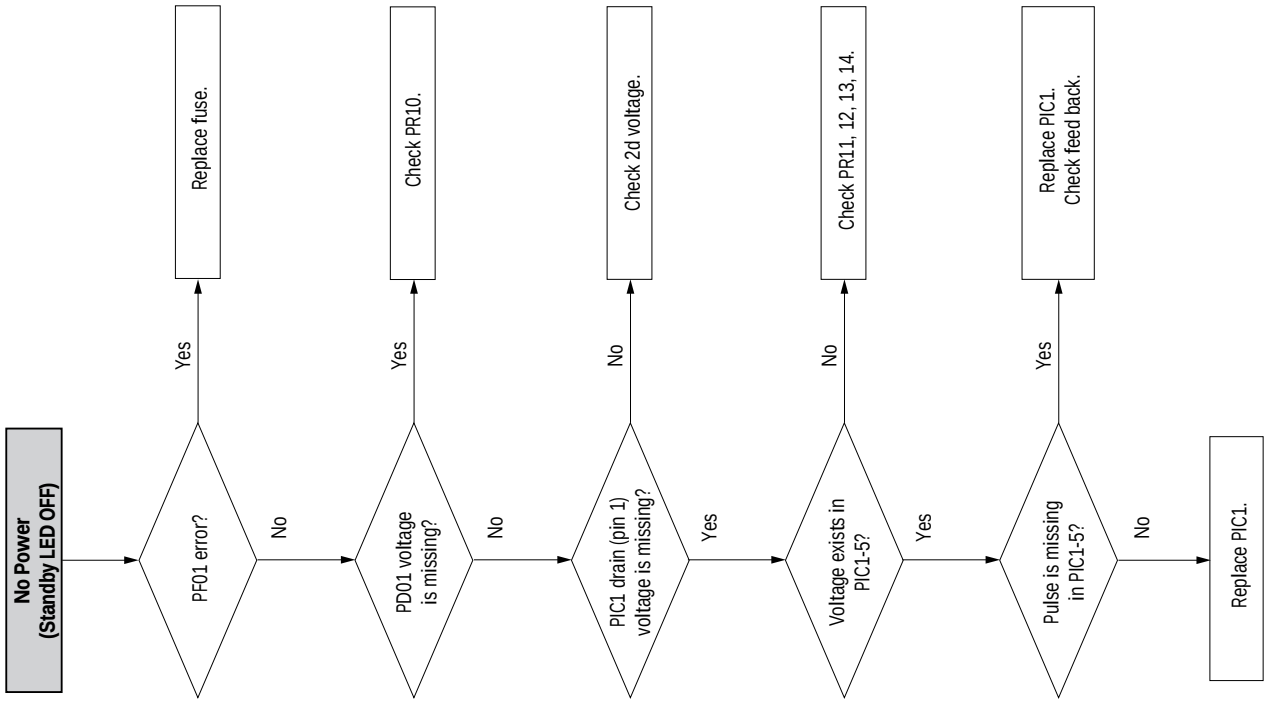

NO LD ON
B
RIC1-28 is 5V?
No
Check MIC1
Yes
RIC-29 output is 200mV?
No
RIC1-50 output is 0V?
Yes
LD MPD error. Replace pick-up
No
Open check in related circuit.
Yes
Divide RQ1 emitter terminal voltage and 5V real voltage difference into 33ohm.
Yes
Current exceeds 0.1A?
No
Yes
LD out pick-up replace.

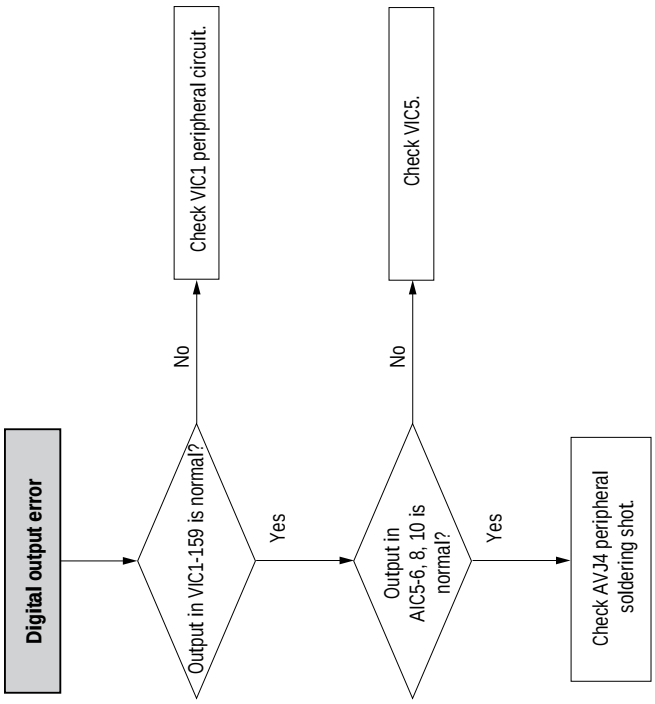

No pick-up home positing
SELED FG Ps0, PS1 is input normally. (SIC1-2, 3)
No
Check SIC8, DRIC2 signal transfer system
Yes
Check SIC1 soldering and power.

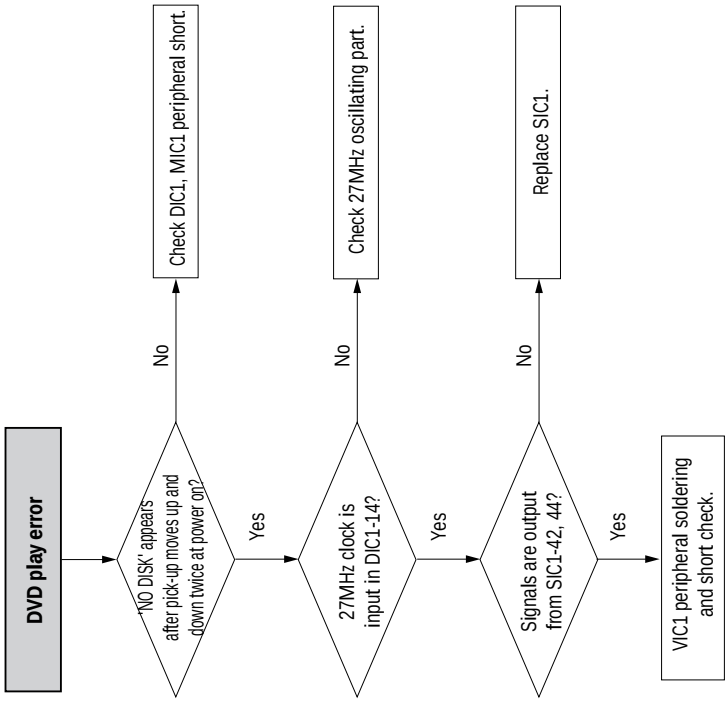

Front L/R output error
(Analog Audio output)
Normal DATA 1 is input in AIC2-7?
No
Check VIC1-163 output.
Yes
Analog output of AIC2-16, 17, 18, 19 is normal?
No
Check VIC1-169 (CD/VCD : 16.9344MHz, DVD : 18.432MHz)
Yes
AOP2-1, 7 output is normal?
No
Check AOP2 peripheral circuit.
Yes
Base terminal level of AQ5, 6, 7, 8 are "L"?
No
Check FIC1-98 mute.
Yes
Check AVJ3 peripheral soldering shot.

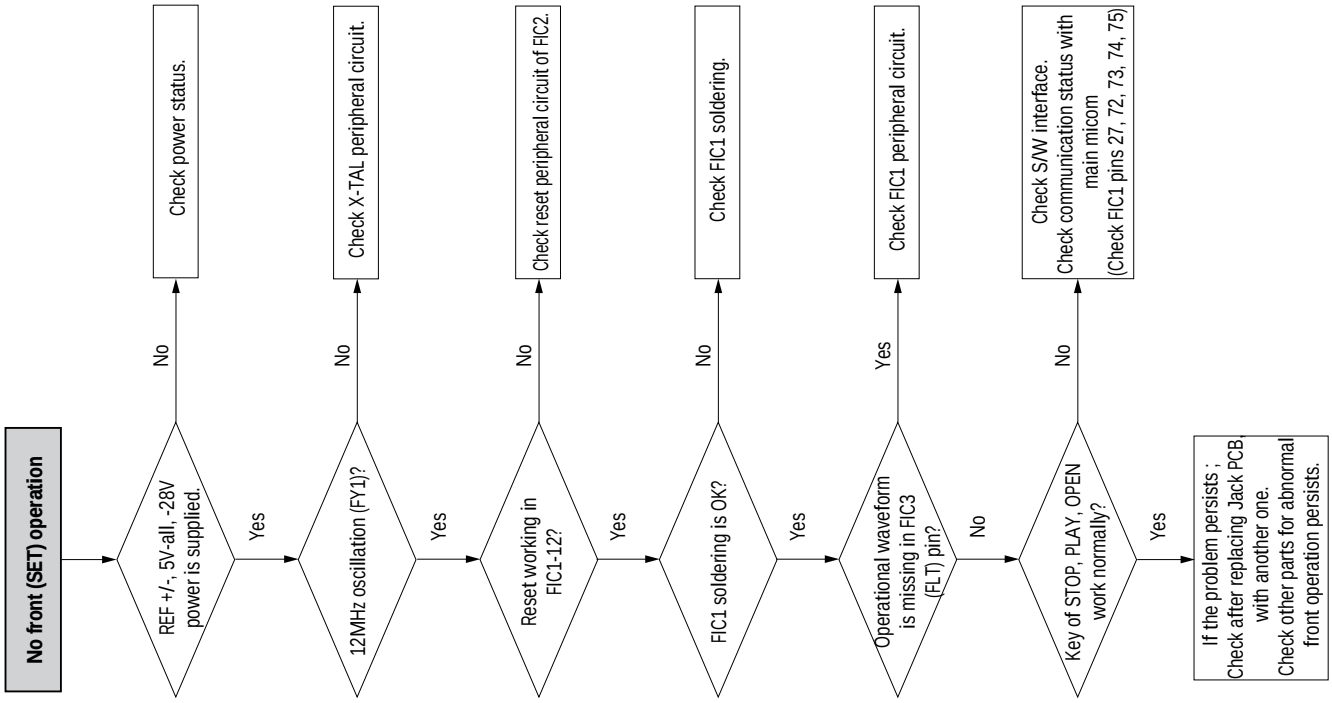

CD/VCD/DVD L/R output error
(Mixed Audio output)
Normal DATA 0 is input in AIC1-7?
No
Check VIC1-161 output.
Yes
Analog output of AIC1-16, 17, 18, 19 is normal?
No
Check VIC1-169 (CD/VCD : 16.9344MHz, DVD : 18.432MHz)
Yes
AOP1-1, 7 output is normal?
No
Check AOP1 peripheral circuit.
Yes
Base terminal level of AQ1, 2, 3, 4 are "L"?
No
Check FIC1-98 mute.
Yes
Check AVJ2 peripheral soldering shot.

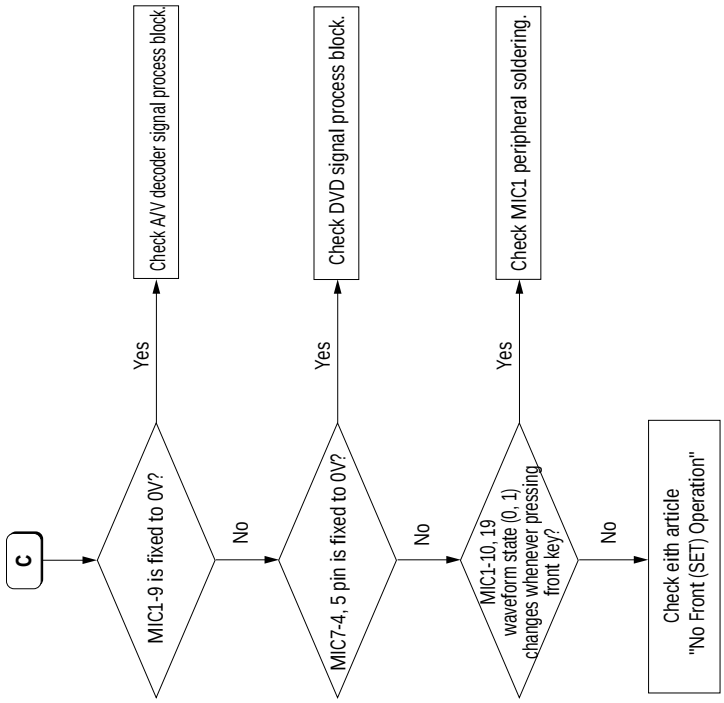

Surround L/R output error (Analog Audio output)
5.1-channel is contained in playing disc?
No
Output only in 2-channel (stereo channel)
Yes
Normal DATA 2 is input in AIC3-7?
No
Check VIC1-164 output.
Yes
Analog output of AIC3-16, 17, 18, 19 is normal?
No
Check VIC1-169 DVD ; 18.432MHz
Yes
AOP3-1, 7 output is normal?
No
Check AOP3 peripheral circuit.
Yes
Base terminal level of AQ9, 10, 11, 12 are "L"?
No
Check FIC1-97 mute.
Yes
Check AVJ3 peripheral soldering shot.
Center/Sub-Woofer output error (Analog Audio output)
5.1-channel is contained in playing disc?
No
Output only in 2-channel (stereo channel)
Yes
Normal DATA 3 is input in AIC4-7?
No
Check VIC1-165 output.
Yes
Analog output of AIC4-16, 17, 18, 19 is normal?
No
Check VIC1-169 DVD ; 18.432MHz
Yes
AOP4-1, 7 output is normal?
No
Check AOP4 peripheral circuit.
Yes
Base terminal level of AQ13, 14, 15, 16 are "L"?
No
Check FIC1-95, 96 mute.
Yes
Check AVJ3 peripheral soldering shot.

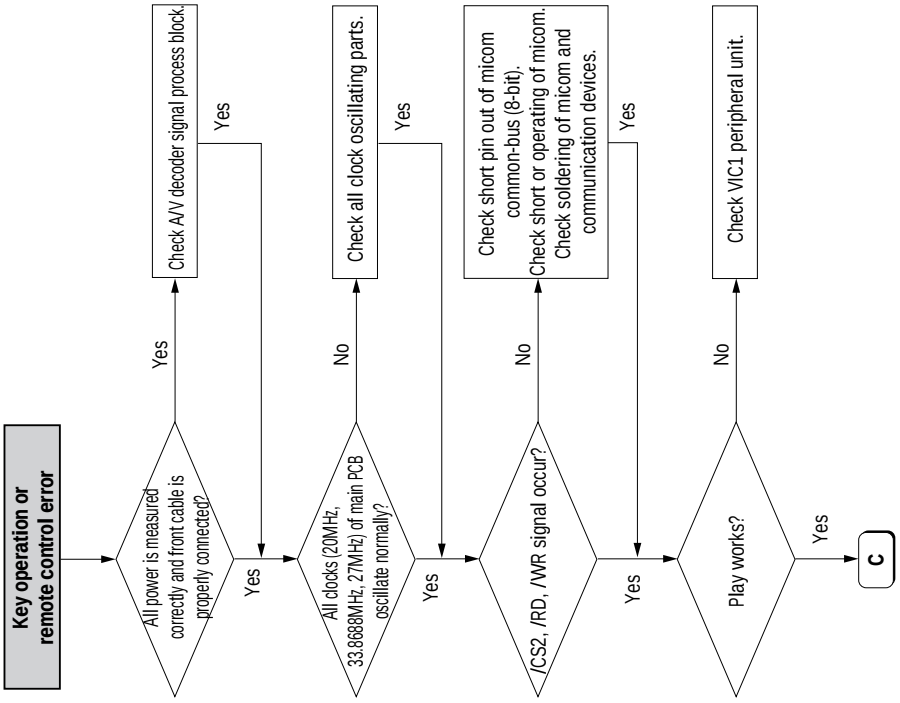

No Power
(Standby LED OFF)
PF01 error?
Yes
Replace fuse.
No
PD01 voltage
is missing?
Yes
Check PR10.
No
PIC1 drain (pin 1)
voltage is missing?
No
Check 2d voltage.
Yes
Voltage exists in
PIC1-5?
No
Check PR11, 12, 13, 14.
Yes
Pulse is missing
in PIC1-5?
Yes
Replace PIC1.
Check feed back.
No
Replace PIC1.

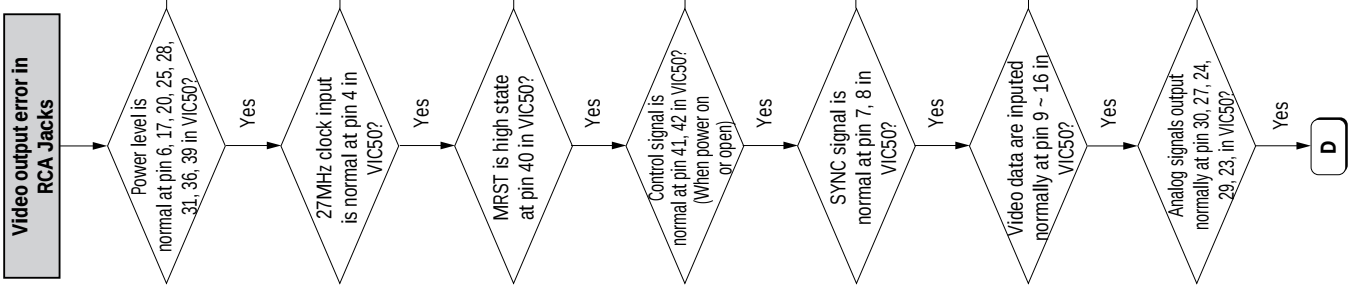

Digital output error
Output in VIC1-159 is normal?
No
Check VIC1 peripheral circuit.
Yes
Output in
AIC5-6, 8, 10 is
normal?
No
Check VIC5.
Yes
Check AVJ4 peripheral
soldering shot.


DVD play error
'NO DISK' appears after pick-up moves up and down twice at power on?
No
Check DIC1, MIC1 peripheral short.
Yes
27MHz clock is input in DIC1-14?
No
Check 27MHz oscillating part.
Yes
Signals are output from SIC1-42, 44?
No
Replace SIC1.
Yes
VIC1 peripheral soldering and short check.


No front (SET) operation
REF +/-, 5V-all, -28V power is supplied.
No
Check power status.
Yes
12MHz oscillation (FY1)?
No
Check X-TAL peripheral circuit.
Yes
Reset working in FIC1-12?
No
Check reset peripheral circuit of FIC2.
Yes
FIC1 soldering is OK?
No
Check FIC1 soldering.
Yes
Operational waveform is missing in FIC3 (FLT) pin?
Yes
Check FIC1 peripheral circuit.
No
Key of STOP, PLAY, OPEN work normally?
No
Check S/W interface. Check communication status with main micom (Check FIC1 pins 27, 72, 73, 74, 75)
Yes
If the problem persists ; Check after replacing Jack PCB with another one. Check other parts for abnormal front operation persists.


C
MIC1-9 is fixed to 0V?
Yes
Check A/V decoder signal process block.
No
MIC7-4, 5 pin is fixed to 0V?
Yes
Check DVD signal process block.
No
MIC1-10, 19 waveform state (0, 1) changes whenever pressing front key?
Yes
Check MIC1 peripheral soldering.
No
Check eith article "No Front (SET) Operation"


Key operation or remote control error
All power is measured correctly and front cable is properly connected?
Yes
Check A/V decoder signal process block.
Yes
All clocks (20MHz, 33.8688MHz, 27MHz) of main PCB oscillate normally?
No
Check all clock oscillating parts.
Yes
/CS2, /RD, /WR signal occur?
No
Check short pin out of micom common-bus (8-bit).
Check short or operating of micom.
Check soldering of micom and communication devices.
Yes
Play works?
No
Check VIC1 peripheral unit.
Yes
C

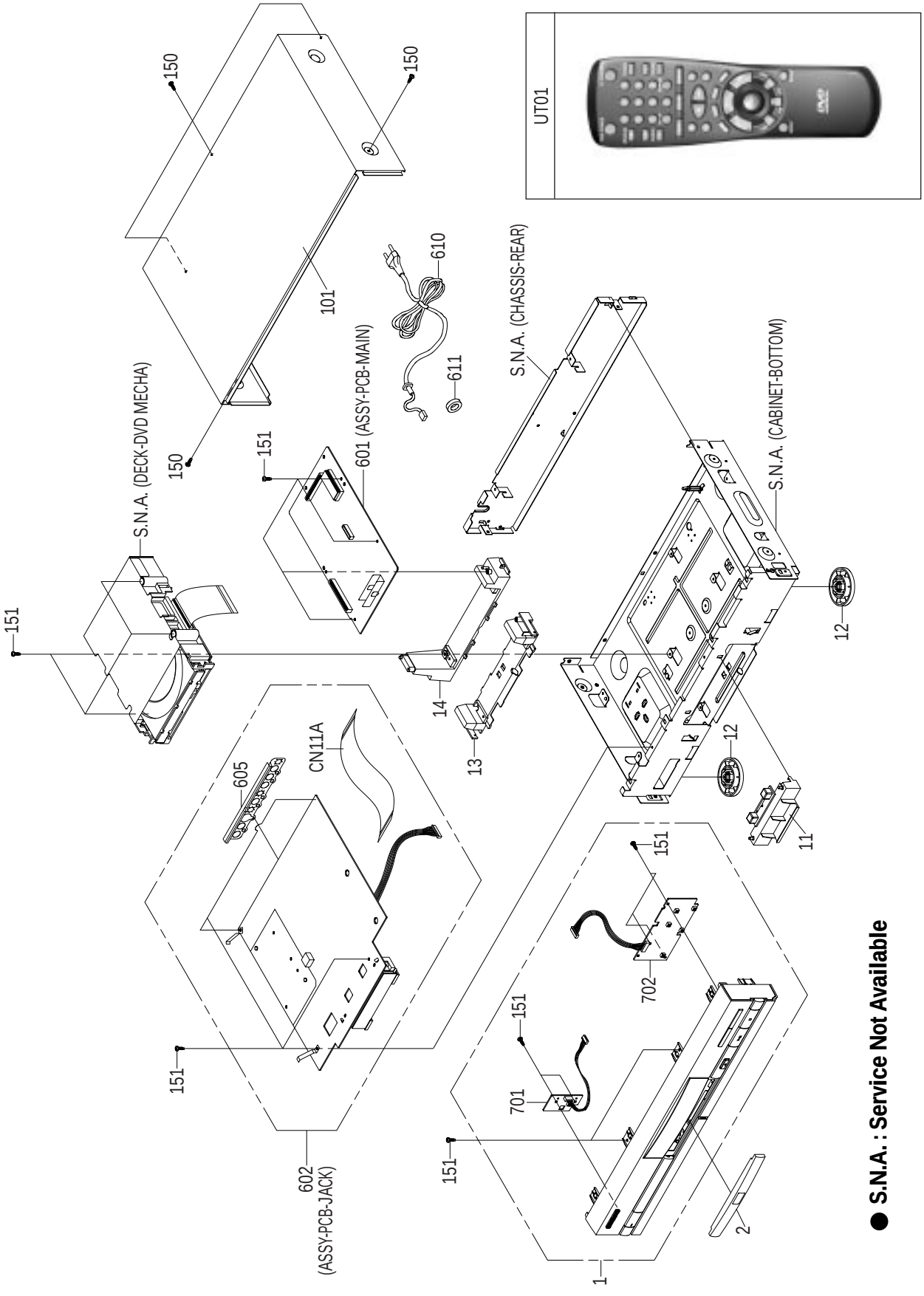

Video output error in RCA Jacks
Power level is normal at pin 6, 17, 20, 25, 28, 31, 36, 39 in VIC50?
No
Check the connection between pin 2 in PIC6 and Emmiter in PQ24.
Yes
27MHz clock input is normal at pin 4 in VIC50?
No
Check the connection between pin 10 in VIC6 and pin 4 in VIC50.
Yes
MRST is high state at pin 40 in VIC50?
No
Check the connection between pin 1 in FIC1 and pin 40 in VIC50.
Yes
Control signal is normal at pin 41, 42 in VIC50? (When power on or open)
No
Check the connection between pin 86, 87 in MIC1 and pin 41, 42 in VIC50.
Yes
SYNC signal is normal at pin 7, 8 in VIC50?
No
Check the soldering of VIC50.
No
Change VIC50.
Yes
Video data are inputed normally at pin 9 ~ 16 in VIC50?
No
Check the connection with pin 180, 182, 184 ~ 189 in VIC1.
Yes
Analog signals output normally at pin 30, 27, 24, 29, 23, in VIC50?
No
Check the soldering of VIC50.
No
Change VIC50.
Yes
D
D
Analog signals are inputed normally at pin 2, 4, 7 in VIC51, 52?
No
Check the connection between VIC50 and VIC51, 52.
Yes
Power is normal at pin 16 in VIC51, 52?
No
Check the connection between VIC51, 52 and Emmiter of PQ24.
Yes
Pin 1 in VIC51, 52 is in Low state?
No
Connect to ground.
Yes
Video signals of about 2V appear at pin 10, 13, 15 in VIC51, 52?
No
Check the soldering of VIC51, 52.
No
Change VIC51, 52.
Yes
Video signals of about 1V appear at output jacks?
No
Check the connection between VIC51, 52 and output jacks.
Yes
Check the RCA cable.

8. Exploded View and Parts List

Page

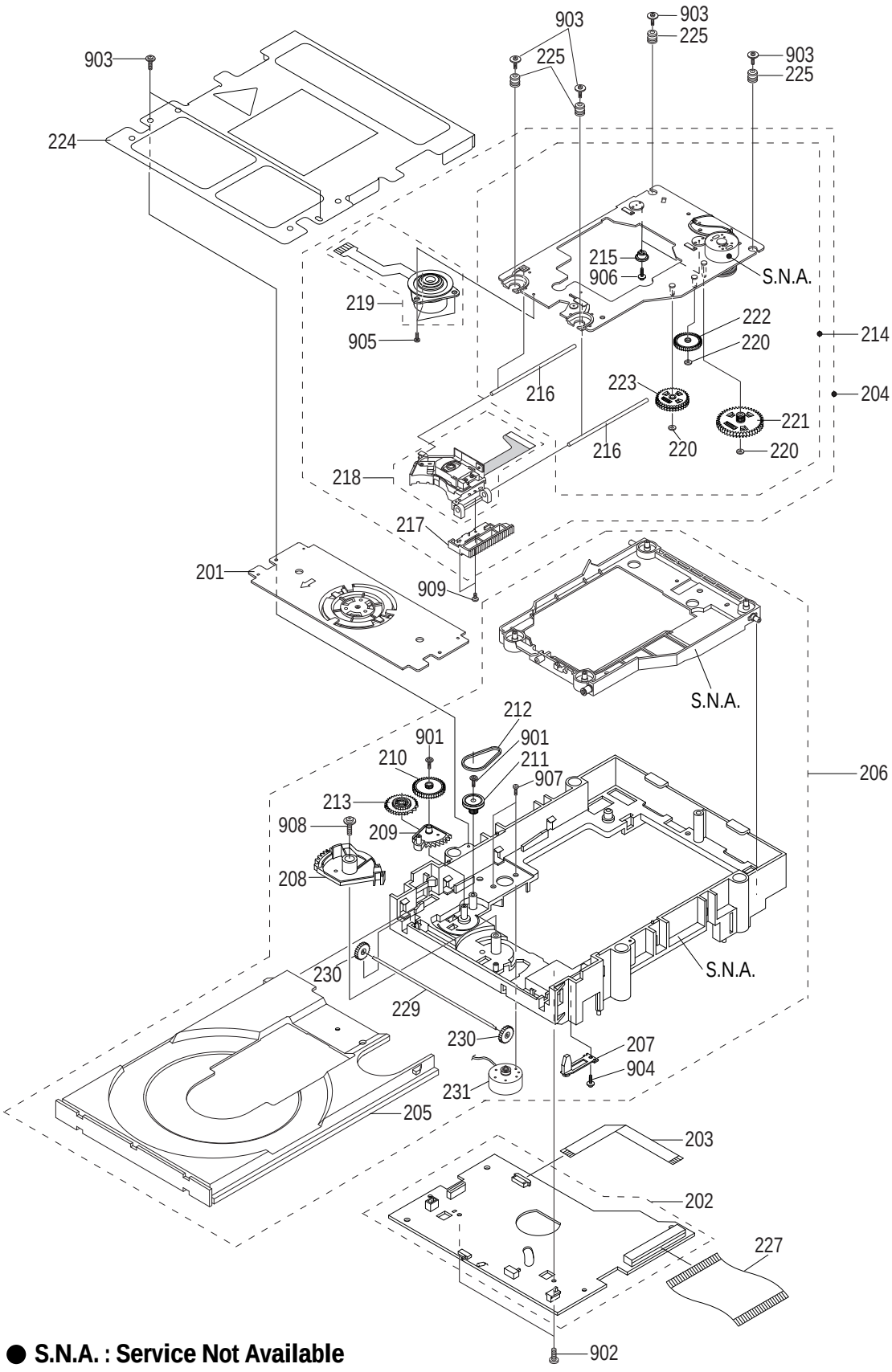
8-1 Cabinet Assembly - - -

8-1 Cabinet Assembly



Loc. No	Parts No.	Description ; Specification	Remark
1	AH95-10355E	ASSY-CABINET FRONT;DVD-739,ABS94HB,XAA	
2	AH95-50369E	ASSY-DOOR TRAY;DVD-739,ABS,XAA	
11	AH61-00194A	HOLDER-DECK A;-,ABS 94HB,-,BLK,-,DVD-909	
12	AH64-80001E	FOOT-FRONT;-,ABS94,HB,T2,SIL,H/STAMP,DVD	
13	AH61-00194B	HOLDER-DECK B;-,ABS 94HB,-,BLK,-,DVD-909	
14	AH61-00194C	HOLDER-DECK C;-,ABS 94HB,-,BLK,-,DVD-909	
150	6003-000275	SCREW-TAPTITE;BH,+,B,M3,L10,BLK,SWCH1018	
151	6003-000276	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(YEL),SWC	
101	AH97-00188D	ASSY-CABINET TOP;DVD-739,ASSY,XAA	
601	AH92-00172A	ASSY-PCB-MAIN;DVD-739,MAIN PCB	
602	AH92-00173A	ASSY-PCB-JACK;DVD-739,JACK PCB	
605	AH63-00040A	GROUND-REAR;-,PBS,T0.2,-,DVD-909	
610	AH39-00034A	POWER CORD;KJ-10W,EP2,-,1.83M,CONNECTOR,	
611	3301-000132	CORE-FERRITE;AC,28.8x19.3x7.5mm,1400,290	
701	AH92-00167A	ASSY-PCB-POWER;DVD-709/DOM,POWER LEADER	
702	AH92-00166A	ASSY-PCB-PLAY;DVD-709/DOM,PLAY LEADER	
UT01	AH59-10141A	REMOCON-ASS'Y;-,-,-,48,DVD-909,S.S	
CN11A	3809-001133	CABLE-FLAT;30V,80C,200MM,35P,1.25MM,UL28	

8-2 Deck Assembly



● **S.N.A. : Service Not Available**

Loc. No	Parts No.	Description ; Specification	Remark
201	AH91-60117A	ASSY-DECK CLAMPER;DVD860,-,DP-1	
202	AH92-00035A	ASSY-PCB-DECK;DP-3,-	
203	3809-001125	CABLE-FLAT;30V,80C,140MM,8P,1MM,UL2896	
204	AH91-60147A	ASSY-BRKT DECK;DP-3,DVD-909,-	
205	AH66-90054A	TRAY-DVD;DP,ABS,-,BLK,-,DP-1	
206	AH91-60154A	ASSY-DECK HOUSING;DP-3,DVD-909,-	
207	AH66-30087A	LEVER-OPEN SW;DP,KEPITAL,T0.7,L26,F20-03	
208	AH66-20194A	GEAR-CAM CENTER;DP,KEPITAL F20-03,M1.2,Z	
209	AH66-20183A	GEAR-CAM SUB;DP,KEPITAL FT2020,M1,2,Z7,-	
210	AH66-20185A	GEAR-TRAY A;DP,KEPITAL F20-03,M0.4/M0.5,	
211	AH66-10024A	PULLEY-GEAR;DP,KEPITAL F20-03,BLK,DP-1	
212	AH66-60033A	BELT-PULLEY;DP,CR,T1.5,0.08,L82.7,BLK,DP	
213	AH66-20184A	GEAR-TRAY;DP,KEPITAL F20-03,M0.5/M0.6,Z4	
214	AH97-00178A	ASSY-BRKT FEED;DP-3,-,SOH-DP1	
215	BG61-20031A	HOLDER-CAM;-,POM,-,-,-,DDR-4	
216	AH61-50327A	SHAFT-P/U;DP,SUS420J2,OD3,L84.7,S/FINISH	
217	AH66-20228A	RACK-SLIDE;DP,KEPITAL F20-03,WHT,M0.4,P1	
218	AH30-20001B	PICK-UP;SPU-DP1 DVD-909	
219	AH91-60151A	ASSY-MOTOR SPINDLE;DP-3,DVD-909,-	
220	AH60-30020A	WASHER-PLAIN;DP,-,ID3.1,OD6,T0.3,RED COL	
221	AH91-60120A	ASSY-GEAR-FEED-AU/AL;DP-1,DVD-860,-	
222	AH66-20182A	GEAR-FEED B;DP,KEPITAL F20-03,M0.4,Z44,W	
223	AH91-60121A	ASSY-GEAR-FEED-CU/CL;DP-1,DVD-860,-	
224	AH63-30245B	COVER-sheet;-,-,-,T0.7,CLR,-,BLK CARBON,	
225	AH73-10017A	RUBBER-INSULATOR;RUBBER(LB-40),OD11,DP-1	
227	3809-001123	CABLE-FLAT;30V,80C,90MM,40P,1.25MM,UL289	
229	AH61-50323A	SHAFT-SYNCRO;-,sus304,2.1,119,-,-,dvd-90	
230	AH66-22005A	GEAR-SYNCRO-A;KEPITAL F20-03,M0.8,Z9,-,P	
231	AH97-00179A	ASSY-HOUSING MOTOR;DP-3,-,SOH-DP1	
901	AH60-10151A	SCREW-TAP TITE;DP,SPEC6.8 ,PH,+,CP,M2,L	
902	AC60-10051A	SCREW-TAPPING;BH,-,-,M3,L8,FZY	
903	AH60-10143U	SCREW-TAP TITE;DP,PH,+,SPEC,TAP1.7,L5,ZP	
904	AH60-10145A	SCREW-TAP TITE;DP,PH,+,SPEC OD5.5 FP,TAP	
905	AH60-10147A	SCREW-MACHINE;DP,CH,+,FP,M2,L4,ZPC,SWRCH	
906	AC60-10059A	SCREW-TAPPING;BH,+,-,1.7,X5,ZPC2	
907	AH60-00010A	SCREW-MACHINE-MOTOR;-,+,SWCH18AK,M1.7,L2	
908	AC60-10042A	SCREW-TAPPING;PWH,+,-,M3,L8,-	
909	BG60-10020A	SCREW-SP MOTOR;-,BHW TOOTH,-,-,M1.7,L3,-	

MEMO

9. Electrical Parts List

Loc.No	Part No	Description ; Specification	Remark
601		**ASSY-PCB-MAIN;DVD-739**	
AR1	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR2	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR3	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR4	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR5	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR6	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR7	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
AR8	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
AR9	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
CN6	3708-001085	CONNECTOR-FPC/FC/PIC;40P,1.25mm,STRAIGHT	
CN7	3711-003358	CONNECTOR-HEADER;BOX,8P,1R,2.5mm,STRAIGH	
CN8	3708-001364	CONNECTOR-FPC/FC/PIC;35P,1.25MM,STRAIGHT	
DC1	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
DC10	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC12	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC13	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC14	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC15	2203-001567	C-CERAMIC,CHIP;10pF,0.5pF,50V,CH,TP,1608	
DC16	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC2	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
DC23	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC24	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC3	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
DC4	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC6	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC7	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC8	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DC9	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DE1	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DIC1	AH13-10030P	IC-ASIC;-,KS1453,TQFP,128P,DATA PRO. I	
DIC2	1105-001233	IC-DRAM;416C256,256KX16BIT,SOJ,40P,400MI	
DIC7	0801-002097	IC-CMOS LOGIC;7SET08,AND GATE,SOP,5P,110	
DL1	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
DRC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC10	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC2	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC3	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC4	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC6	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC7	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC8	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRC9	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
DRE1	2401-002075	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	
DRE2	2401-002075	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	
DRE3	2401-002075	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	
DRE4	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRE5	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRE6	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRE7	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRE8	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRE9	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
DRIC1	1003-001130	IC-MOTOR DRIVER;KA3011DTF,SOP,28P,-,QUAD	
DRIC2	1003-001067	IC-MOTOR DRIVER;KA3010D,SOP,28P,375MIL,Q	
DRL1	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
DRL2	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
DRR10	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
DRR11	2007-000087	R-CHIP;6.8Kohm,5%,1/16W,DA,TP,1608	
DRR12	2007-000087	R-CHIP;6.8Kohm,5%,1/16W,DA,TP,1608	
DRR13	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
DRR14	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
DRR3	2007-007157	R-CHIP;1ohm,5%,1/4W,DA,TP,3216	
DRR4	2007-007157	R-CHIP;1ohm,5%,1/4W,DA,TP,3216	
DRR7	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
DRR9	2007-000616	R-CHIP;24Kohm,5%,1/16W,DA,TP,1608	
MC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC10	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC12	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC13	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC14	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC16	2203-001656	C-CERAMIC,CHIP;470pF,5%,50V,CH,TP,1608,1	
MC18	2203-001656	C-CERAMIC,CHIP;470pF,5%,50V,CH,TP,1608,1	
MC19	2203-001656	C-CERAMIC,CHIP;470pF,5%,50V,CH,TP,1608,1	
MC2	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC20	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC3	2203-000426	C-CERAMIC,CHIP;18pF,5%,50V,NPO,1608,-,TP	
MC4	2203-000426	C-CERAMIC,CHIP;18pF,5%,50V,NPO,1608,-,TP	
MC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC6	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC7	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC8	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MC9	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
MIC1	0903-001144	IC-MICROCONTROLLER;93CM41,8BIT,QFP,100P,	
MIC2	0801-002207	IC-CMOS LOGIC;74AC573,LATCH,SOP,20P,300M	
MIC5	1103-001133	IC-EEPROM;24C020,256x8BIT,SOP,8P,150MIL,	
MIC6	0801-002143	IC-CMOS LOGIC;7S32,OR GATE,SOT-25,5P,63M	
MIC7	0801-000379	IC-CMOS LOGIC;74HC00,NAND GATE,SOP,14P,1	
MIC8	1102-001090	IC-EPROM;27C081,1MX8BIT,DIP,32P,600MIL,1	
MIC8A	3704-000472	SOCKET-IC;32P,DIP,SN,2.54mm	
ML1	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
MQ1	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
MR1	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR10	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR12	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR13	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR14	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR15	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR16	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR17	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR18	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR19	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR2	2007-000109	R-CHIP;1Mohm,5%,1/16W,DA,TP,1608	
MR22	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR23	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR24	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
MR25	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
MR3	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR33	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
MR34	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR35	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR36	2007-000124	R-CHIP;2.2Kohm,5%,1/16W,DA,TP,1608	
MR37	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
MR38	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
MR39	2007-000103	R-CHIP;120Kohm,5%,1/16W,DA,TP,1608	
MR4	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR40	2007-000402	R-CHIP;150ohm,5%,1/16W,DA,TP,1608	
MR43	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
MR5	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	

Loc.No	Part No	Description ; Specification	Remark
MR6	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR7	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR8	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MR9	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
MXTAL1	2801-000199	CRYSTAL-UNIT;20MHz,50ppm,28-AAA,16pF,50o	
PC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
PC2	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
PC3	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
PC4	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
PE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE2	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE3	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE4	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
RC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC10	2203-000257	C-CERAMIC,CHIP;10nF,10%,50V,X7R,TP,1608,	
RC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC12	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
RC13	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
RC14	2203-000440	C-CERAMIC,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC15	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC16	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC17	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC2	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC20	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC21	2203-000384	C-CERAMIC,CHIP;.015NF,5%,50V,NPO,TP,1608	
RC22	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC23	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC24	2203-001697	C-CERAMIC,CHIP;.082NF,5%,50V,NPO,TP,1608	
RC25	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC26	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC27	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC28	2203-001052	C-CERAMIC,CHIP;.56NF,10%,50V,X7R,TP,1608	
RC29	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC3	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC31	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC32	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC33	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC34	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC35	2203-000236	C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,1608,	
RC36	2203-000140	C-CERAMIC,CHIP;1.5nF,10%,50V,X7R,TP,1608	
RC37	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC38	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC39	2203-000531	C-CERAMIC,CHIP;2.7nF,10%,50V,X7R,TP,1608	
RC4	2203-000236	C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,1608,	
RC40	2203-000257	C-CERAMIC,CHIP;10nF,10%,50V,X7R,TP,1608,	
RC41	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC42	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC43	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC44	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC45	2203-001652	C-CERAMIC,CHIP;470NF,+80-20%,16V,Y5V,TP,	
RC46	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
RC47	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC50	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC51	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC52	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC53	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC54	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
RC55	2203-000888	C-CERAMIC,CHIP;4.7nF,10%,50V,X7R,TP,1608	
RC6	2203-001052	C-CERAMIC,CHIP;.56NF,10%,50V,X7R,TP,1608	
RC7	2203-001640	C-CERAMIC,CHIP;390pF,10%,50V,X7R,TP,1608	
RC8	2203-000384	C-CERAMIC,CHIP;.015NF,5%,50V,NPO,TP,1608	
RC9	2203-000257	C-CERAMIC,CHIP;10nF,10%,50V,X7R,TP,1608,	
RD1	0401-000008	DIODE-SWITCHING;DAN217,80V,100mA,SOT-23,	
RD2	0403-001079	DIODE-ZENER;UDZ3.9B,7%,200MW,SOD-323,TP	
RD6	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
RD7	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
RE10	2401-002036	C-AL;1uF,20%,50V,GP,TP,5x11,2.5mm	
RE11	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
RE12	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
RE13	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
RE17	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
RE2	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
RE8	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	
RE9	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
RIC1	AH13-10030M	IC-ASIC;-,KS1461,VQFP,100P,RF IC	
RIC2	0801-002279	IC-CMOS LOGIC;74VHC4053,MUX,SOP,16P,150M	
RIC3	1202-000121	IC-VOLTAGE COMP.;2903,SOP,8P,150MIL,DUAL	
RIC4	1201-000163	IC-OP AMP;4560,SOP,8P,150MIL,DUAL,100V/M	
RIC6	0801-002097	IC-CMOS LOGIC;7SET08,AND GATE,SOP,5P,110	
RL2	2703-000398	INDUCTOR-SMD;10UH,10%,3.2X2.5X2.2MM	
RL3	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
RL4	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
RQ1	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	
RQ2	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
RR1	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR10	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
RR11	2007-000509	R-CHIP;2.4Kohm,1%,1/16W,DA,TP,1608	
RR12	2007-000093	R-CHIP;20Kohm,5%,1/16W,DA,TP,1608	
RR13	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
RR14	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR15	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
RR16	2007-000704	R-CHIP;3.6Kohm,5%,1/16W,DA,TP,1608	
RR17	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
RR18	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR19	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR2	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
RR20	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR21	2007-000081	R-CHIP;2.7Kohm,5%,1/16W,DA,TP,1608	
RR22	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR23	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR24	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
RR25	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR26	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR27	2007-000130	R-CHIP;39Kohm,5%,1/16W,DA,TP,1608	
RR28	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
RR29	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
RR3	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR30	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR31	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
RR32	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR32A	2007-000108	R-CHIP;510Kohm,5%,1/16W,DA,TP,1608	
RR33	2007-000082	R-CHIP;3.3Kohm,5%,1/16W,DA,TP,1608	
RR34	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR35	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
RR36	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR37	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR38	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR39	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR4	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR40	2007-000655	R-CHIP;27Kohm,5%,1/16W,DA,TP,1608	
RR41	2007-000708	R-CHIP;3.9Kohm,1%,1/16W,DA,TP,1608	
RR42	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR43	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR44	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR45	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR46	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR47	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR48	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
RR49	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR5	2007-001056	R-CHIP;6.2Kohm,5%,1/16W,DA,TP,1608	
RR50	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	

Loc.No	Part No	Description ; Specification	Remark
RR51	2007-000134	R-CHIP;33Kohm,5%,1/16W,DA,TP,1608	
RR52	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR53	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
RR53A	2007-000087	R-CHIP;6.8Kohm,5%,1/16W,DA,TP,1608	
RR56	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR57	2007-000088	R-CHIP;7.5Kohm,5%,1/16W,DA,TP,1608	
RR58	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR59	2007-000082	R-CHIP;3.3Kohm,5%,1/16W,DA,TP,1608	
RR6	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
RR62	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
RR63	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
RR65	2007-000082	R-CHIP;3.3Kohm,5%,1/16W,DA,TP,1608	
RR67	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
RR68	2007-000655	R-CHIP;27Kohm,5%,1/16W,DA,TP,1608	
RR69	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
RR69A	2007-000431	R-CHIP;16Kohm,5%,1/16W,DA,TP,1608	
RR7	2007-000072	R-CHIP;47ohm,5%,1/16W,DA,TP,1608	
RR70	2007-000134	R-CHIP;33Kohm,5%,1/16W,DA,TP,1608	
RR71	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
RR8	2007-000077	R-CHIP;470ohm,5%,1/16W,DA,TP,1608	
RR9	2007-000783	R-CHIP;33OHM,5%,1/8W,DA,TP,3216	
SC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC10	2203-001222	C-CERAMIC,CHIP;820pF,10%,50V,X7R,TP,1608	
SC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC14	2203-000491	C-CERAMIC,CHIP;2.2nF,10%,50V,X7R,TP,1608	
SC15	2203-000491	C-CERAMIC,CHIP;2.2nF,10%,50V,X7R,TP,1608	
SC16	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC17	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
SC18	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC19	2203-000140	C-CERAMIC,CHIP;1.5nF,10%,50V,X7R,TP,1608	
SC2	2203-001573	C-CERAMIC,CHIP;12pF,5%,50V,CH,1608,1.6mm	
SC20	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC21	2203-001567	C-CERAMIC,CHIP;10pF,0.5pF,50V,CH,TP,1608	
SC26	2203-002398	C-CERAMIC,CHIP;22nF,10%,50V,X7R,TP,1608,	
SC29	2203-000372	C-CERAMIC,CHIP;15nF,10%,50V,X7R,TP,1608,	
SC3	2203-001573	C-CERAMIC,CHIP;12pF,5%,50V,CH,1608,1.6mm	
SC30	2203-000372	C-CERAMIC,CHIP;15nF,10%,50V,X7R,TP,1608,	
SC31	2203-000491	C-CERAMIC,CHIP;2.2nF,10%,50V,X7R,TP,1608	
SC32	2203-000491	C-CERAMIC,CHIP;2.2nF,10%,50V,X7R,TP,1608	
SC33	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
SC34	2203-000405	C-CERAMIC,CHIP;180pF,5%,50V,NPO,TP,1608,	
SC36	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC37	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC38	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC39	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC4	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC6	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC7	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
SC9	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
SD2	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
SD3	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
SE1	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
SE2	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
SE3	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
SE4	2401-000240	C-AL;100uF,20%,10V,GP,TP,5x11,5	
SE5	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
SIC1	AH13-10030N	IC-ASIC;-,KS1452,QFP,80P,DSSP IC	
SIC2	0801-002097	IC-CMOS LOGIC;7SET08,AND GATE,SOP,5P,110	
SIC3	0801-002097	IC-CMOS LOGIC;7SET08,AND GATE,SOP,5P,110	
SIC8	1202-000121	IC-VOLTAGE COMP.;2903,SOP,8P,150MIL,DUAL	
SL2	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
SL3	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
SL4	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
SQ1	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
SR1	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	

Loc.No	Part No	Description ; Specification	Remark
SR10	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
SR11	2007-000107	R-CHIP;470Kohm,5%,1/16W,DA,TP,1608	
SR12	2007-001235	R-CHIP;910Kohm,5%,1/16W,DA,TP,1608	
SR13	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
SR14	2007-000450	R-CHIP;180ohm,5%,1/16W,DA,TP,1608	
SR15	2007-000102	R-CHIP;100Kohm,5%,1/16W,DA,TP,1608	
SR16	2007-000131	R-CHIP;91Kohm,5%,1/16W,DA,TP,1608	
SR17	2007-000093	R-CHIP;20Kohm,5%,1/16W,DA,TP,1608	
SR18	2007-000093	R-CHIP;20Kohm,5%,1/16W,DA,TP,1608	
SR19	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
SR2	2007-000109	R-CHIP;1Mohm,5%,1/16W,DA,TP,1608	
SR20	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
SR21	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
SR22	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
SR23	2007-000130	R-CHIP;39Kohm,5%,1/16W,DA,TP,1608	
SR24	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
SR26	2007-000091	R-CHIP;12Kohm,5%,1/16W,DA,TP,1608	
SR3	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
SR31	2007-000080	R-CHIP;2Kohm,5%,1/16W,DA,TP,1608	
SR32	2007-000080	R-CHIP;2Kohm,5%,1/16W,DA,TP,1608	
SR33	2007-000080	R-CHIP;2Kohm,5%,1/16W,DA,TP,1608	
SR34	2007-000124	R-CHIP;2.2Kohm,5%,1/16W,DA,TP,1608	
SR35	2007-000124	R-CHIP;2.2Kohm,5%,1/16W,DA,TP,1608	
SR36	2007-000124	R-CHIP;2.2Kohm,5%,1/16W,DA,TP,1608	
SR37	2007-000124	R-CHIP;2.2Kohm,5%,1/16W,DA,TP,1608	
SR38	2007-000092	R-CHIP;15Kohm,5%,1/16W,DA,TP,1608	
SR39	2007-000458	R-CHIP;18Kohm,5%,1/16W,DA,TP,1608	
SR4	2007-001179	R-CHIP;8.2Kohm,5%,1/16W,DA,TP,1608	
SR40	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
SR42	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
SR44	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
SR45	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
SR46	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
SR47	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
SR48	2007-000109	R-CHIP;1Mohm,5%,1/16W,DA,TP,1608	
SR49	2007-000109	R-CHIP;1Mohm,5%,1/16W,DA,TP,1608	
SR5	2007-000087	R-CHIP;6.8Kohm,5%,1/16W,DA,TP,1608	
SR50	2007-000082	R-CHIP;3.3Kohm,5%,1/16W,DA,TP,1608	
SR51	2007-000082	R-CHIP;3.3Kohm,5%,1/16W,DA,TP,1608	
SR52	2007-000704	R-CHIP;3.6Kohm,5%,1/16W,DA,TP,1608	
SR53	2007-000123	R-CHIP;1.5Kohm,5%,1/16W,DA,TP,1608	
SR54	2007-000077	R-CHIP;470ohm,5%,1/16W,DA,TP,1608	
SR6	2007-000098	R-CHIP;56Kohm,5%,1/16W,DA,TP,1608	
SR7	2007-000799	R-CHIP;360ohm,5%,1/16W,DA,TP,1608	
SR8	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
SR9	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
SY1	2801-000261	CRYSTAL-UNIT;33.8688MHZ,50PPM,28-AAA,12P	
VC1	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC10	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC11	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC12	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC13	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC14	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC15	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC16	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC17	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC18	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC19	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC20	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC21	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC22	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC23	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC24	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC25	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC26	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC27	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	

Loc.No	Part No	Description ; Specification	Remark
VC28	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC29	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC3	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC30	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC31	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC32	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC33	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC34	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC35	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC36	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC37	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC38	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC39	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC4	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC40	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC41	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC42	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC43	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC44	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC45	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC47	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC48	2203-000681	C-CERAMIC,CHIP;27pF,5%,50V,NPO,1608,-,TP	
VC5	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC50	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC51	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC52	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC53	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC54	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC55	2203-000560	C-CERAMIC,CHIP;220nF,+80-20%,25V,Y5V,TP,	
VC6	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC61	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC62	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC65	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC66	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC67	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC68	2203-000815	C-CERAMIC,CHIP;33pF,5%,50V,NPO,TP,1608,-	
VC69	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC7	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC70	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC71	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC72	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC73	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC74	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC75	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC76	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC77	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC78	2203-000626	C-CERAMIC,CHIP;22pF,5%,50V,NPO,TP,1608,-	
VC8	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VC81	2203-000851	C-CERAMIC,CHIP;39pF,5%,50V,NPO,TP,1608,-	
VC82	2203-000851	C-CERAMIC,CHIP;39pF,5%,50V,NPO,TP,1608,-	
VC83	2203-001071	C-CERAMIC,CHIP;56pF,5%,50V,NPO,TP,1608,-	
VC84	2203-000236	C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,1608,	
VC85	2203-000236	C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,1608,	
VC9	2203-000189	C-CERAMIC,CHIP;100nF,+80-20%,25V,Y5V,TP,	
VE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
VE2	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
VIC1	1204-001438	IC-DECODER;ZIVA-3,VQFP,208P,1098MIL,PLAS	
VIC10	1105-001259	IC-DRAM;416S1020,16BIT,TSOP,50P,400MIL,8	
VIC3	0801-002097	IC-CMOS LOGIC;7SET08,AND GATE,SOP,5P,110	
VIC4	1105-001259	IC-DRAM;416S1020,16BIT,TSOP,50P,400MIL,8	
VIC6	AH14-10004R	IC;M74HCU04,SOP,TAPE 14P	
VL1	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL10	2007-000029	R-CHIP;0OHM,5%,1/10W,DA,TP,2012	
VL11	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL12	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL13	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	

Loc.No	Part No	Description ; Specification	Remark
VL14	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL15	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL16	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL17	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL18	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL19	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL2	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL20	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL21	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL22	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL23	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL24	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL25	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL26	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL27	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL28	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL29	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL3	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL4	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL5	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL6	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VR1	2007-000078	R-CHIP;1Kohm,5%,1/16W,DA,TP,1608	
VR10	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
VR100	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR101	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR102	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR103	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR104	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR2	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
VR21	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR22	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR23	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR24	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR25	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR26	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR27	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR28	2007-000090	R-CHIP;10Kohm,5%,1/16W,DA,TP,1608	
VR3	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR30	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR31	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR32	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR33	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR34	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR35	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR36	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR37	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR38	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR39	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR4	2007-000084	R-CHIP;4.7Kohm,5%,1/16W,DA,TP,1608	
VR40	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR41	2007-000113	R-CHIP;33ohm,5%,1/16W,DA,TP,1608	
VR42	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR43	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR44	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR45	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR46	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR47	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR48	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR49	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR50	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR51	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR52	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR54	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR55	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR56	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
VR57	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	

Loc.No	Part No	Description ; Specification	Remark
VR58	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR59	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR60	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR61	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR62	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR63	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR64	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR65	2007-000075	R-CHIP;220ohm,5%,1/16W,DA,TP,1608	
VR66	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR67	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR68	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR69	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR7	2007-000116	R-CHIP;120ohm,5%,1/16W,DA,TP,1608	
VR70	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR71	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR72	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR73	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR74	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR75	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR76	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR77	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR78	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR79	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR80	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR81	2007-000074	R-CHIP;100ohm,5%,1/16W,DA,TP,1608	
VR82	2007-000402	R-CHIP;150ohm,5%,1/16W,DA,TP,1608	
VR83	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR84	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR85	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR86	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR87	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR88	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR89	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR9	2007-000109	R-CHIP;1Mohm,5%,1/16W,DA,TP,1608	
VR90	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR91	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR92	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR93	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR94	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR95	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR96	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR97	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR98	2007-001134	R-CHIP;68ohm,5%,1/16W,DA,TP,1608	
VR99	2007-000070	R-CHIP;0ohm,5%,1/16W,DA,TP,1608	
VY1	2801-003554	CRYSTAL-UNIT;27MHz,10ppm,28-AAM,12pF,40o	

Loc.No	Part No	Description ; Specification	Remark
602		**ASSY-PCB-JACK;DVD-739**	
AC1	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC10	2203-000444	C-CERAMIC,CHIP;1nF,10%,50V,X7R,TP,2012,-	
AC11	2202-000806	C-CERAMIC,MLC-AXIAL;220pF,10%,50V,Y5P,TP	
AC12	2203-000595	C-CERAMIC,CHIP;220pF,5%,50V,NPO,TP,2012,	
AC2	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC3	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
AC4	2203-000444	C-CERAMIC,CHIP;1nF,10%,50V,X7R,TP,2012,-	
AC5	2203-000595	C-CERAMIC,CHIP;220pF,5%,50V,NPO,TP,2012,	
AC56	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC6	2203-000595	C-CERAMIC,CHIP;220pF,5%,50V,NPO,TP,2012,	
AC60	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
AC7	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC71	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC73	2301-000161	C-FILM,PEF;12nF,5%,50V,6.5X5.5X3.0X5,5mm	
AC74	2301-000161	C-FILM,PEF;12nF,5%,50V,6.5X5.5X3.0X5,5mm	
AC8	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
AC90	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
AC94	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
AC95	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
AC98	2203-000239	C-CERAMIC,CHIP;100pF,5%,50V,NPO,TP,2012,	
AD1	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD2	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD4	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
AD5	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
AD6	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD7	0407-000114	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AE1	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
AE10	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
AE11	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
AE2	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
AE3	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
AE30	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
AE31	2401-001969	C-AL;470uF,20%,25V,GP,TP,10x12.5,5	
AE4	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
AE5	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
AE6	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
AE7	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
AE8	2401-002068	C-AL;33uF,20%,16V,GP,TP,5x11,5	
AE9	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
AIC1	1002-001129	IC-D/A CONVERTER;AK4324VF,24BIT,VSOP,24P	
AIC5	AH14-10004R	IC;M74HCU04,SOP,TAPE 14P	
AL1	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
AL19	2901-001125	FILTER-EMI ON BOARD;50V,0.5A,-,220pF,7x7	
AL2	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
AL5	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
AL6	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
AOP1	1201-000163	IC-OP AMP;4560,SOP,8P,150MIL,DUAL,100V/M	
AQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ17	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	
AQ18	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	
AQ19	0504-001003	TR-DIGITAL;KSR2003,PNP,300MW,22K/22K,TO-	
AQ2	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ20	0504-000156	TR-DIGITAL;DTA124EKA,PNP,200mW,22K-22K	
AQ21	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ22	0504-000156	TR-DIGITAL;DTA124EKA,PNP,200mW,22K-22K	
AQ3	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ33	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ4	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AR1	2007-000290	R-CHIP;100OHM,5%,1/10W,DA,TP,2012	
AR10	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR11	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR119	2007-000766	R-CHIP;330OHM,5%,1/10W,DA,TP,2012	
AR12	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR121	2007-001247	R-CHIP;91OHM,5%,1/10W,DA,TP,2012	

Loc.No	Part No	Description ; Specification	Remark
AR13	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR130	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR134	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR138	2007-000029	R-CHIP;0OHM,5%,1/10W,DA,TP,2012	
AR14	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR15	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR150	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR151	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR18	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR19	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR20	2001-000003	R-CARBON;330OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR21	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR22	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR23	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR24	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR25	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR26	2007-001055	R-CHIP;6.2KOHM,5%,1/10W,DA,TP,2012	
AR27	2007-000300	R-CHIP;10KOHM,5%,1/10W,DA,TP,2012	
AR28	2001-000003	R-CARBON;330OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR29	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR30	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR31	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR32	2007-000766	R-CHIP;330OHM,5%,1/10W,DA,TP,2012	
AR41	2001-000003	R-CARBON;330OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR42	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR8	2007-000308	R-CHIP;10OHM,5%,1/10W,DA,TP,2012	
AR9	2001-000878	R-CARBON;6.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR90	2001-000241	R-CARBON;1.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR91	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR92	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AVJ1	3722-001355	JACK-RCA;3P(4P),3.2MM,NI,GRN/RED/BLU,-	
AVJ2	3722-001358	JACK-RCA;3P,3.2MM,NI,BLK,-	
AVJ4	3722-001053	JACK-RCA;1P,3.2mm,NI,BLK,-	
AZD1	0403-000551	DIODE-ZENER;MTZ3.9B,3.9V,3.89-4.16V,500m	
CN11	3708-000277	CONNECTOR-FPC/FC/PIC;35P,1.25mm,ANGLE,SN	
CN12	AH39-00035A	LEAD CONNECTOR-ASSY;-,5264-08,35023-08,8	
CN16	3711-001061	CONNECTOR-HEADER;BOX,6P,1R,2mm,ANGLE,SN	
CN18	3711-000967	CONNECTOR-HEADER;BOX,4P,1R,2mm,ANGLE,SN	
FC1	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FC10	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FC14	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FC15	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FC16	2202-000173	C-CERAMIC,MLC-AXIAL;1nF,10%,50V,Y5P,TP,1	
FC2	2203-000389	C-CERAMIC,CHIP;15pF,5%,50V,NPO,TP,2012,-	
FC3	2203-000389	C-CERAMIC,CHIP;15pF,5%,50V,NPO,TP,2012,-	
FC4	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FC6	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
FD10	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
FD6	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
FD7	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
FD8	0401-000101	DIODE-SWITCHING;1N4148,100V,200mA,DO-35,	
FD9	0403-000551	DIODE-ZENER;MTZ3.9B,3.9V,3.89-4.16V,500m	
FE1	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
FE12	2401-000240	C-AL;100uF,20%,10V,GP,TP,5x11,5	
FE13	2401-000240	C-AL;100uF,20%,10V,GP,TP,5x11,5	
FE2	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
FE5	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
FE8	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
FIC1	AH09-00010A	IC-MICOM MASKING;LC866232,100PIN,QIP,FLT	
FIC2	1203-001252	IC-VOL. DETECTOR;7545,TO-92,3P,-,PLASTIC	
FIC3	0801-002166	IC-CMOS LOGIC;7SHU04,INVERTER,SSOP,5P,63	
FIC4	AH59-60010A	MODULE-REMOCON;-,GP1U281Q,38KHz,940,MESH	
FL1	2701-000114	INDUCTOR-AXIAL;10uH,10%,2.5x3.4mm	
FL2	2701-000113	INDUCTOR-AXIAL;100uH,5%,2.5x3.4mm	
FR1	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR10	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	

Loc.No	Part No	Description ; Specification	Remark
FR101	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR102	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR103	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR104	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR105	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR106	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR11	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR12	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR13	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR16	2001-000027	R-CARBON;100OHM,5%,1/4W,AA,TP,2.4X6.4MM	
FR17	2001-000027	R-CARBON;100OHM,5%,1/4W,AA,TP,2.4X6.4MM	
FR18	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR19	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR20	2001-000449	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR21	2001-000435	R-CARBON;1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR24	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR25	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR26	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR31	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR32	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR33	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR34	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR35	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR36	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR37	2007-000282	R-CHIP;100KOHM,5%,1/10W,DA,TP,2012	
FR43	2001-000793	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR44	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR45	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR46	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR5	2001-000325	R-CARBON;120OHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR57	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
FR58	2007-000029	R-CHIP;0OHM,5%,1/10W,DA,TP,2012	
FR59	2007-000029	R-CHIP;0OHM,5%,1/10W,DA,TP,2012	
FY1	2802-000108	RESONATOR-CERAMIC;12MHZ,0.5%,BK,10.0X5.0	
PC01	2305-001021	C-FILM,MPEF;100nF,20%,275V,TP,17.5x7x13.	⚠
PC02	2305-001021	C-FILM,MPEF;100nF,20%,275V,TP,17.5x7x13.	⚠
PC04	2301-000140	C-FILM,PEF;10nF,10%,630V,BK,16.5X9.5X5.7	
PC05	2201-000129	C-CERAMIC,DISC;100pF,10%,1KV,Y5P,TP,6x5,	⚠
PC07	2301-000129	C-FILM,PEF;100nF,5%,50V,TP,10X9X4.3X5,5m	
PC09	2301-000415	C-FILM,PEF;22nF,5%,50V,TP,6.5x10.5x4mm,5	
PC10	2201-000916	C-CERAMIC,DISC;100pF,10%,400V,Y5U,TP,10x	⚠
PC11	2201-000916	C-CERAMIC,DISC;100pF,10%,400V,Y5U,TP,10x	⚠
PC12	2203-000575	C-CERAMIC,CHIP;220NF,10%,25V,X7R,TP,2012	
PC13	2203-000575	C-CERAMIC,CHIP;220NF,10%,25V,X7R,TP,2012	
PC14	2203-000575	C-CERAMIC,CHIP;220NF,10%,25V,X7R,TP,2012	
PC15	2203-000575	C-CERAMIC,CHIP;220NF,10%,25V,X7R,TP,2012	
PC44	2301-000129	C-FILM,PEF;100nF,5%,50V,TP,10X9X4.3X5,5m	
PCN01	3711-000178	CONNECTOR-HEADER;1WALL,2P,1R,3.96mm,STRA	⚠
PD01	0402-001009	DIODE-RECTIFIER;1SR139,600V,1A,MSR,TP	⚠
PD02	0402-001009	DIODE-RECTIFIER;1SR139,600V,1A,MSR,TP	⚠
PD03	0402-001009	DIODE-RECTIFIER;1SR139,600V,1A,MSR,TP	⚠
PD04	0402-001009	DIODE-RECTIFIER;1SR139,600V,1A,MSR,TP	⚠
PD11	0402-000378	DIODE-RECTIFIER;EG01C,1000V,500mA,DO-41	
PD12	0402-001013	DIODE-RECTIFIER;1SR153-400,400V,800mA,DO	
PD3	0402-001013	DIODE-RECTIFIER;1SR153-400,400V,800mA,DO	
PD31	0402-001013	DIODE-RECTIFIER;1SR153-400,400V,800mA,DO	
PD32	0402-000430	DIODE-RECTIFIER;FML-G02S,200V,3.0A,TO-22	
PD33	0402-001251	DIODE-RECTIFIER;FMG-22R,200V,10A,TO-220F	
PD34	0402-001251	DIODE-RECTIFIER;FMG-22R,200V,10A,TO-220F	
PD35	0402-001013	DIODE-RECTIFIER;1SR153-400,400V,800mA,DO	
PD37	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
PD38	0402-000132	DIODE-RECTIFIER;1N4004,400V,1A,DO-41,TP	
PE10	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
PE11	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
PE12	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
PE13	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	

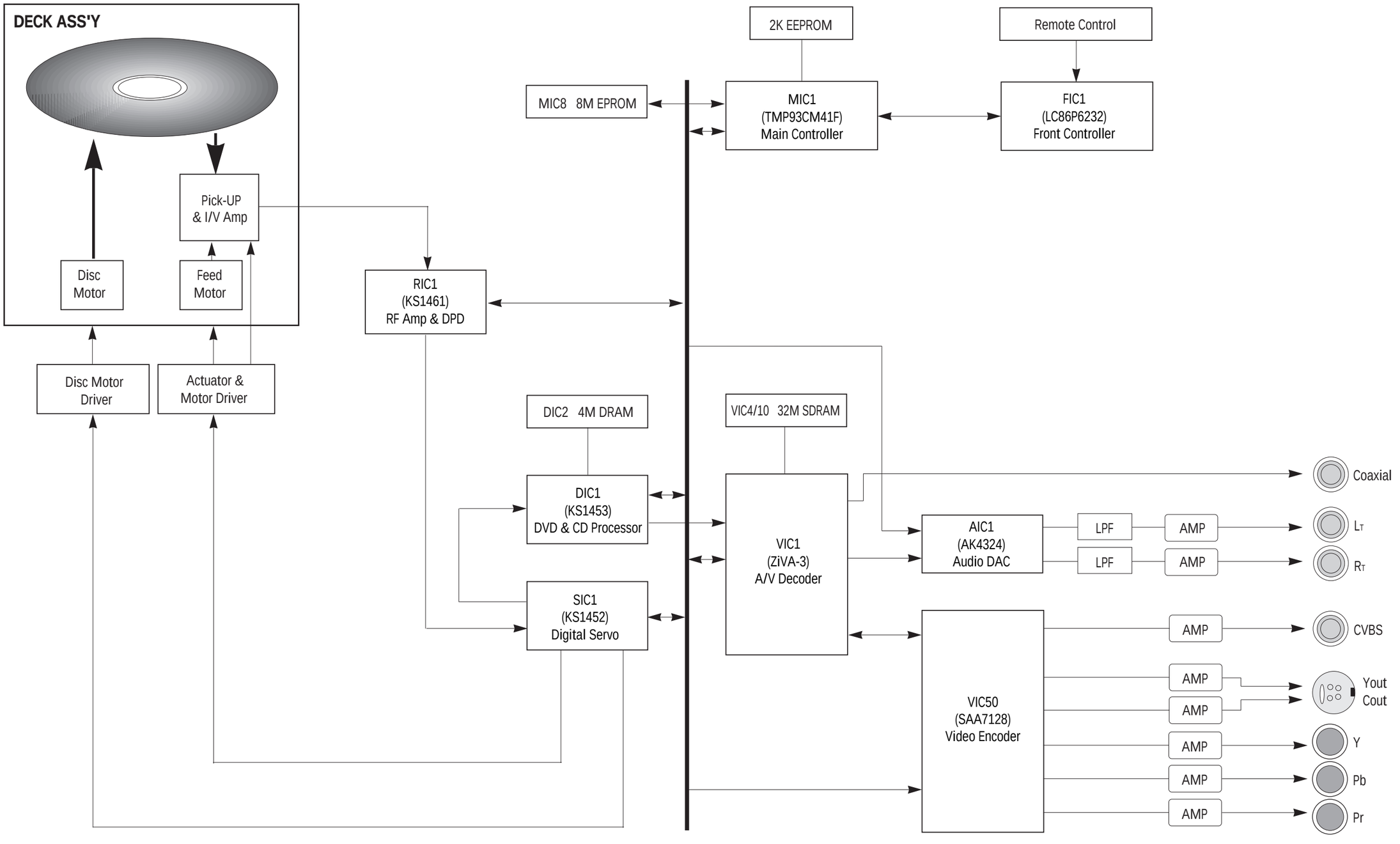
Loc.No	Part No	Description ; Specification	Remark
PE3	2401-001682	C-AL;82uF,20%,400V,GP,BK,22x25,10mm	⚠
PE31	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
PE32	2401-001998	C-AL;1000uF,20%,25V,GP,TP,10x20,5mm	
PE33	2401-001998	C-AL;1000uF,20%,25V,GP,TP,10x20,5mm	
PE35	2401-000360	C-AL;100uF,20%,50V,GP,TP,8x11.5,5	
PE36	2401-001998	C-AL;1000uF,20%,25V,GP,TP,10x20,5mm	
PE37	2401-001134	C-AL;330uF,20%,35V,WT,TP,10x16,5	
PE38	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
PE39	2401-001134	C-AL;330uF,20%,35V,WT,TP,10x16,5	
PE4	2401-000302	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
PE41	2401-002036	C-AL;1uF,20%,50V,GP,TP,5x11,2.5mm	
PE42	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
PE43	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	
PE44	2401-002036	C-AL;1uF,20%,50V,GP,TP,5x11,2.5mm	
PE6	2401-001583	C-AL;47uF,20%,50V,WT,TP,6.3x11,5	
PF0A	3601-000453	FUSE-FERRULE;250V,1.6A,SB,GLASS,5.2x20mm	⚠
PIC1	1203-001721	IC-PWM CONTROLLER;STR-G6153T,T0-220,5P,1	⚠
PIC2	0604-000186	PHOTO-COUPLER;TR,-,200mW,DIP-4,ST	⚠
PIC3	AC14-12006D	IC;KA431Z,TO-92,TAPING	
PIC4	1203-000122	IC-NEGA.FIXED REG.;7908,TO-220,3P,-,PLAS	
PIC5	1203-001697	IC-VOLTAGE REGULATOR;78R08,TO-220,4P,-,P	
PIC6	1203-001083	IC-VOLTAGE REGULATOR;3RF23,TO-202,4P,12.	
PL01	AC29-30050A	FILTER-LINE NOISE;-,400UH,-,250V,-	⚠
PL02	AC27-92001Q	COIL-LINE FILTER;BSF-2120Z,25MH,-,-,-	⚠
PL03	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
PL11	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
PQ1	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
PQ2	0501-000616	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1W,TO-92L	
PQ21	0504-000142	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
PQ22	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	
PQ23	0502-000298	TR-POWER;KSD73,NPN,30W,TO-220,-,120-240	
PQ24	0502-000298	TR-POWER;KSD73,NPN,30W,TO-220,-,120-240	
PQ3	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	
PQ4	0504-000142	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
PR10	2006-000262	R-CEMENT;2.7ohm,10%,2W,CB,ST,7.5x11x20.	
PR11	2001-000073	R-CARBON;33KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
PR12	2001-000073	R-CARBON;33KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
PR13	2001-000073	R-CARBON;33KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
PR14	2001-000073	R-CARBON;33KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
PR15	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
PR16	2003-000994	R-METAL OXIDE(S);33Kohm,5%,2W,AF,TP,3.9x	
PR17	2003-000148	R-METAL OXIDE;100OHM,5%,2W,AE,TP,6X16MM	
PR18	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR2	2003-000148	R-METAL OXIDE;100OHM,5%,2W,AE,TP,6X16MM	
PR20	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR3	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR31	2001-000034	R-CARBON;220OHM,5%,1/4W,AA,TP,2.4X6.4MM	
PR32	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR33	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR34	2001-000440	R-CARBON;1OHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR35	2001-000362	R-CARBON;150OHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR36	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR37	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR38	2004-000869	R-METAL;3Kohm,1%,1/8W,AA,TP,1.8x3.2mm	
PR39	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	
PR4	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR40	2003-000111	R-METAL OXIDE;0.47ohm,5%,1W,AD,TP,4.3x12	
PR5	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
PR6	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
PT01	AH26-00008A	TRANS-SWITCHING;-,85V-240V,UL/CSA,EE2821	⚠
PVA01	1405-000186	VARISTOR;470V,4500A,17x12mm,TP	
PZD31	0403-000716	DIODE-ZENER;MTZJ4.7B,4.7V,4.55-4.8V,500m	
RC12	2201-000812	C-CERAMIC,DISC;2.2nF,20%,400V,Y5U,BK,11x	⚠
RC13	2201-000812	C-CERAMIC,DISC;2.2nF,20%,400V,Y5U,BK,11x	⚠
RL03	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
SVJ1	3722-001375	JACK-DIN;4P,-,NI,BLK,-	

Loc.No	Part No	Description ; Specification	Remark
VC1	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
VC10	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC100	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
VC101	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
VC102	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
VC103	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
VC104	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
VC105	2007-000029	R-CHIP;0OHM,5%,1/10W,DA,TP,2012	
VC11	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC12	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC13	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC14	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC2	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
VC3	2203-000192	C-CERAMIC,CHIP;100nF,+80-20%,50V,Y5V,TP,	
VC4	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC5	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC6	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC7	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC8	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VC9	2202-000849	C-CERAMIC,MLC-AXIAL;18pF,5%,50V,CH,TP,3.	
VE51	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
VE54	2401-000369	C-AL;100UF,20%,6.3V,GP,-,6.3X11,5	
VE55	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
VE58	2401-000369	C-AL;100UF,20%,6.3V,GP,-,6.3X11,5	
VE58A	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
VE60	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
VE61	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
VE66	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
VE67	2401-000913	C-AL;22uF,20%,16V,GP,TP,5x11mm,2.5m	
VE69	2401-001353	C-AL;470uF,20%,10V,GP,TP,8x11.5,5	
VE70	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
VE71	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
VE72	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
VE73	2401-002042	C-AL;220uF,20%,10V,GP,TP,6.3x11,5	
VFD1	AH07-00002A	VF-DISPLAY;SVV-08M,21SEG,25X100MM,DVD-90	
VIC50	1204-001366	IC-VIDEO ENCODER;SAA7128,QFP,44P,-,PLAST	
VIC51	1201-001419	IC-VIDEO AMP;7660,SSOP,16P,173MIL,3,6DB,	
VIC52	1201-001419	IC-VIDEO AMP;7660,SSOP,16P,173MIL,3,6DB,	
VL100	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL110	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
VL111	3301-000297	CORE-FERRITE BEAD;AA,3.6x1.2x5.7mm,1400,	
VL112	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VL113	2701-000138	INDUCTOR-AXIAL;18uH,5%,2.4x3.4mm	
VL115	2701-000002	INDUCTOR-AXIAL;100uH,10%,4.2x9.8mm	
VL116	2701-000002	INDUCTOR-AXIAL;100uH,10%,4.2x9.8mm	
VL119	3301-000353	CORE-FERRITE BEAD;AB,2.0x1.25x0.9mm,-,-	
VR10	2001-000008	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR100	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR108	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR109	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR11	2001-000008	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR110	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR111	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR112	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR113	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR114	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR115	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR116	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR117	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR12	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR13	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR130	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR132	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR133	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR14	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR146	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	

Loc.No	Part No	Description ; Specification	Remark
VR15	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR16	2001-000734	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR17	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR175	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR176	2001-000554	R-CARBON;270OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR177	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR178	2001-000003	R-CARBON;330OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR18	2001-000666	R-CARBON;33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR192	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR4	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR5	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR7	2001-000977	R-CARBON;8.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR8	2001-000977	R-CARBON;8.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR9	2001-000008	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
701		**ASSY-PCB-POWER**	
CON24	AH39-00033A	LEAD CONNECTOR-ASSY;-,51004-04,35023-04,	
KD2	0601-001238	LED;ROUND,RED,3.1mm,697nm	
KSW2	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
702		**ASSY-PCB-PLAY**	
CON22	AH39-00028A	LEAD CONNECTOR-ASSY;-,51004-06,35023-06,	
FSW1	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
FSW2	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
FSW4	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
FSW5	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
FSW6	3404-000165	SWITCH-TACT;12V,50mA,160gf+-50gf,6x6mm,S	
202		**ASSY-PCB-DECK;DP-3,-**	
CN1	3708-001081	CONNECTOR-FPC/FC/PIC;11P,1mm,STRAIGHT,SN	
CN2	3708-001001	CONNECTOR-FPC/FC/PIC;20P,1mm,SMD-A,SN	
CN3	3711-000827	CONNECTOR-HEADER:BOX,2P,1R,2mm,STRAIGHT,	
CN4	3708-001108	CONNECTOR-FPC/FC/PIC;8P,1.0MM,ANGLE,SN	
CN5	3708-001084	CONNECTOR-FPC/FC/PIC;40P,1.25mm,ANGLE,SN	
DC1	2203-000208	C-CERAMIC,CHIP;100nF,10%,50V,X7R,TP,3216	
DC2	2203-000208	C-CERAMIC,CHIP;100nF,10%,50V,X7R,TP,3216	
DC3	2203-000208	C-CERAMIC,CHIP;100nF,10%,50V,X7R,TP,3216	
DC4	2203-000612	C-CERAMIC,CHIP;22nF,10%,50V,X7R,TP,3216,	
DE1	2404-000259	C-TA,CHIP;47uF,20%,6.3V,-,TP,6032,-	
DE2	2404-000259	C-TA,CHIP;47uF,20%,6.3V,-,TP,6032,-	
DL1	3301-000325	CORE-FERRITE BEAD;AB,3.2x2.5x1.3mm,-,-	
DLED	0601-001372	LED;ROUND,GRN,3.5MM,621NM	
DR1	2007-000800	R-CHIP;360ohm,5%,1/8W,DA,TP,3216	
DR2	2007-000451	R-CHIP;180OHM,5%,1/8W,DA,TP,3216	
DR3	2007-000451	R-CHIP;180OHM,5%,1/8W,DA,TP,3216	
DR4	2007-000303	R-CHIP;10KOHM,5%,1/8W,DA,TP,3216	
DR5	2007-000303	R-CHIP;10KOHM,5%,1/8W,DA,TP,3216	
SW1	AH34-30001A	SWITCH-PUSH;2EA,6.65X7.5,-,DC5V	
SW2	3403-001001	SWITCH-PUSH;5V,5mA,-,OFF-ON	
SW3	3408-000323	SWITCH-SLIDE;SSSS712GD011/12VDC 100ma	

Loc.No	Part No	Description ; Specification	Remark

10. Block Diagram



MEMO

11. PCB Diagrams

11-1 Main ---------- 11-2

11-2 Jack ---------- 11-3

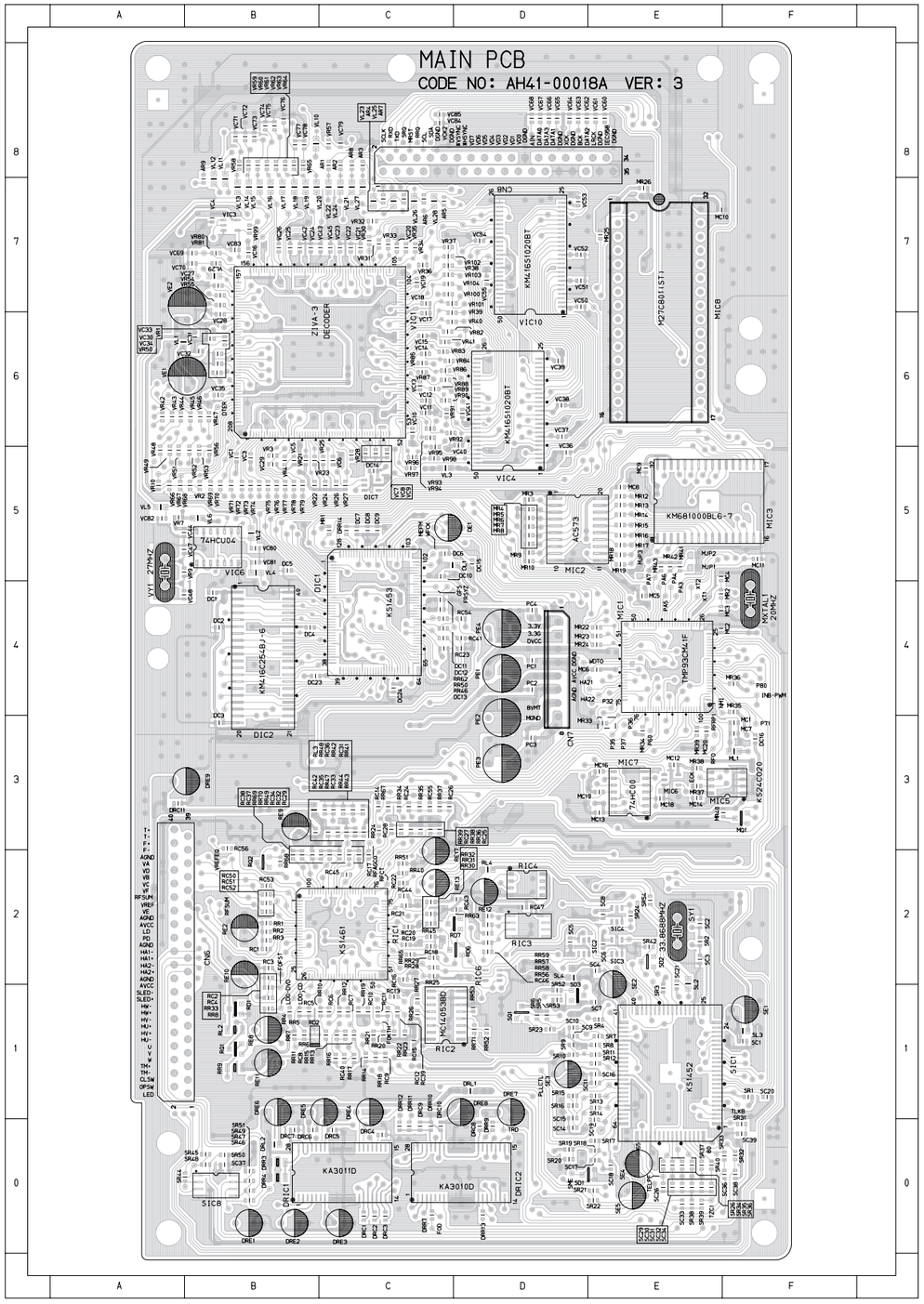
11-3 Power ---------- 11-4

11-4 Play ---------- 11-4

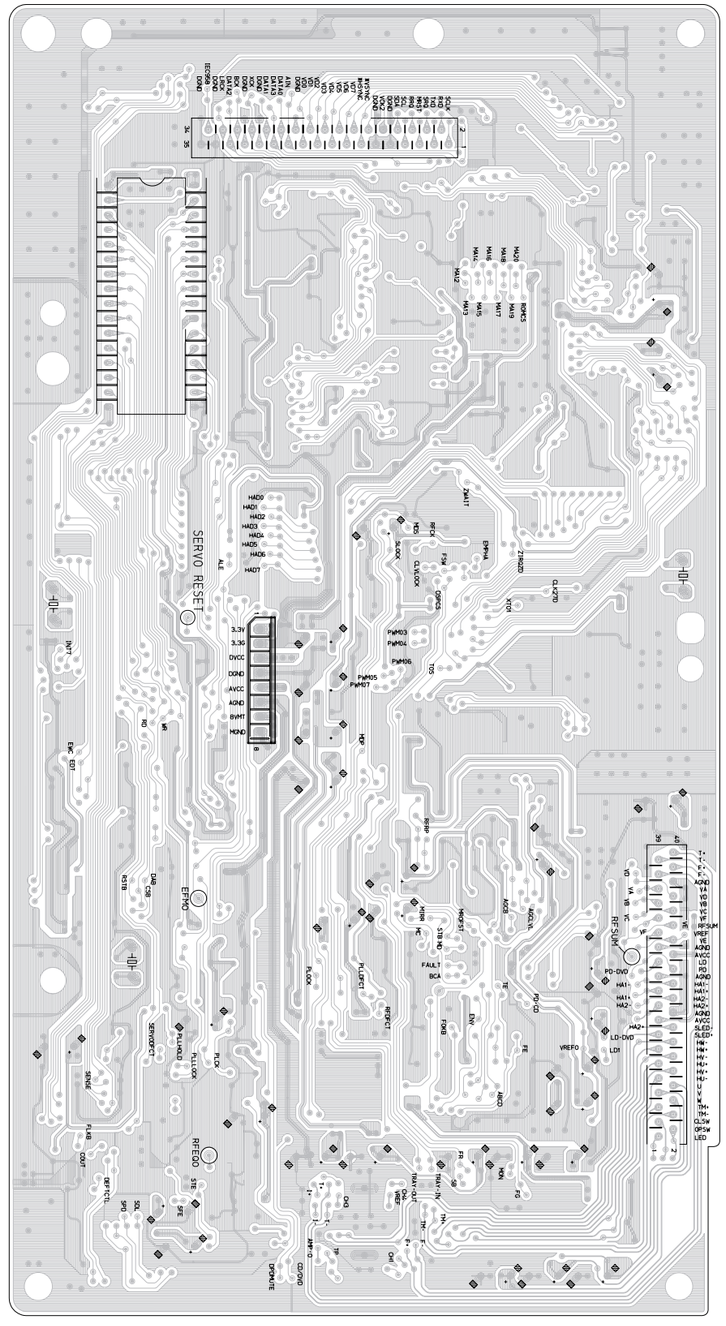
11-5 Deck ---------- 11-4

11-1 Main

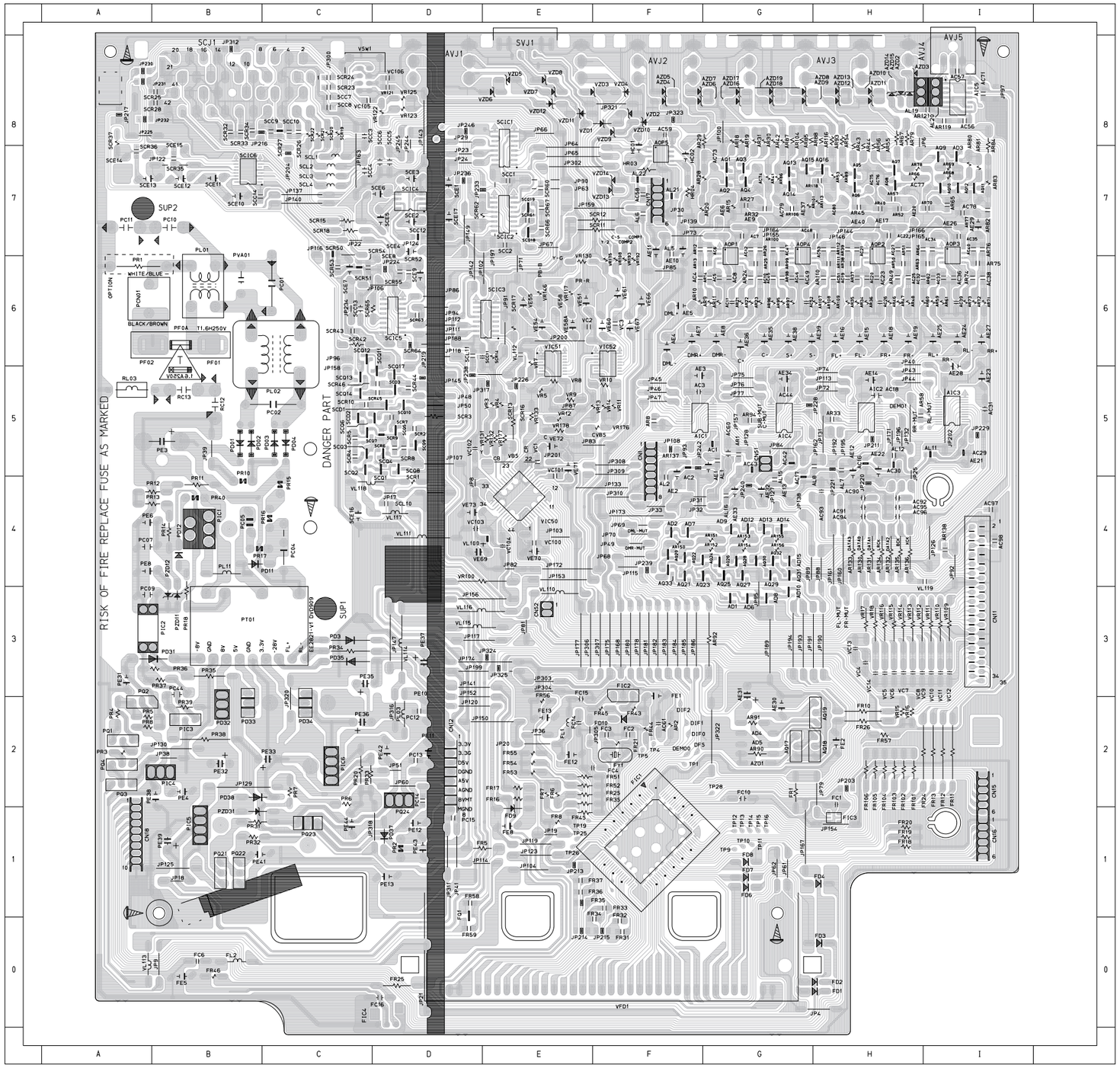
COMPONENT SIDE



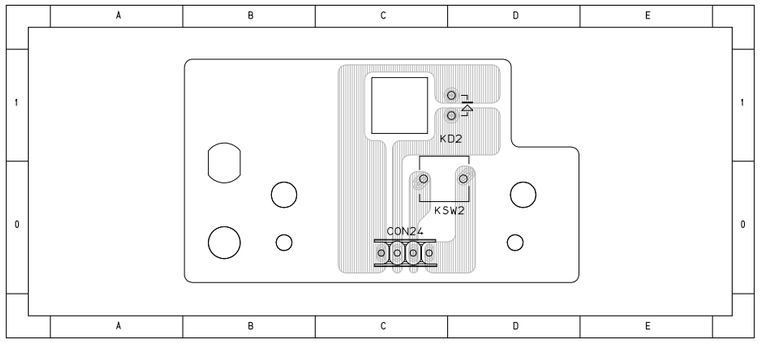
SOLDER SIDE



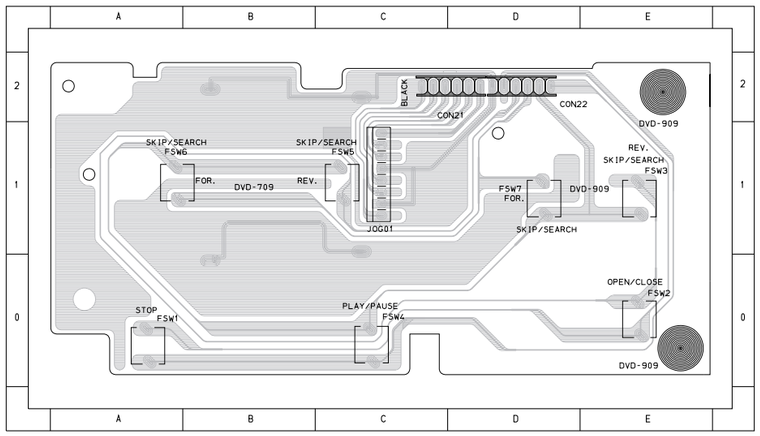
11-2 Jack


SCJ1
SVJ1
AVJ1
AVJ2
AVJ3
AVJ5
SUP1
SUP2
DANGER PART
RISK OF FIRE REPLACE FUSE AS MARKED
OPTION
BLACK/BROWN
WHITE/BLUE
T1.6H250V
PT01
CN1
CN2
CN5
CN6
CN16
CN18

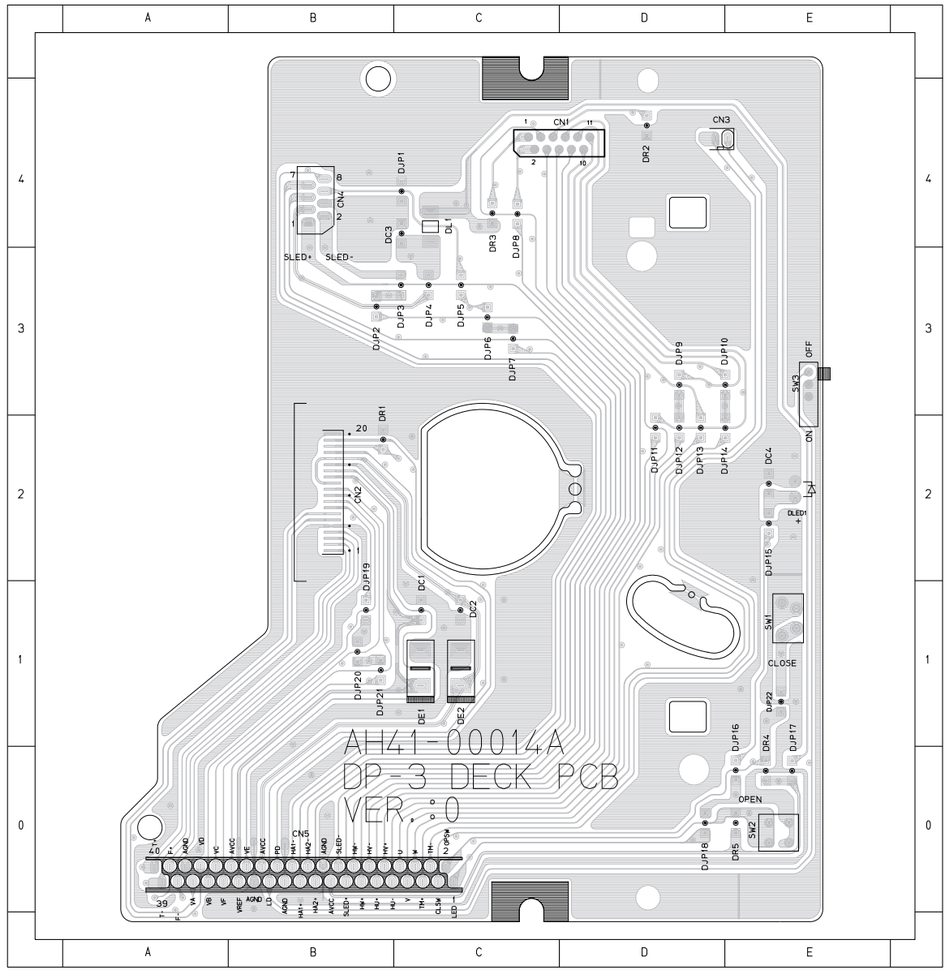
11-3 Power



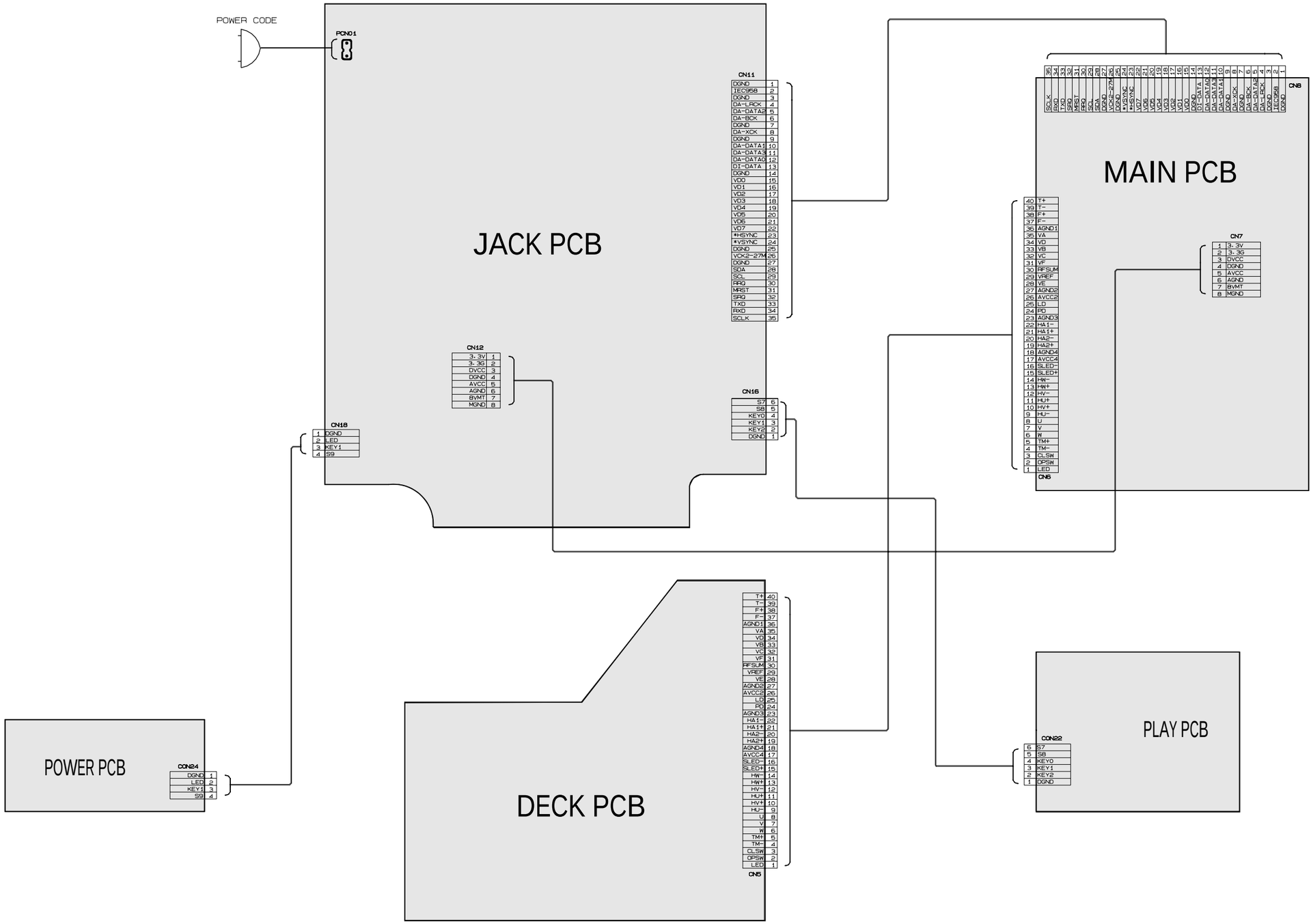
11-4 Play



11-5 Deck



12. Wiring Diagram



MEMO